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CONTRIBUTIONS TO AMERICAN ECONOMIC HISTORY

FROM THE

DEPARTMENT OF ECONOMICS AND SOCIOLOGY

OF THE

CARNEGIE INSTITUTION OF WASHINGTON

HENRY W. FARNAM, *Chairman*

WALTER F. WILLCOX

KENYON L. BUTTERFIELD

EDWARD W. PARKER

VICTOR S. CLARK

B. H. MEYER

EMORY R. JOHNSON

DAVIS R. DEWEY

JOHN R. COMMONS

J. W. JENKS

HENRY B. GARDNER

ALFRED H. STONE

History of Transportation in the United States before 1860

PREPARED UNDER THE DIRECTION OF
BALTHASAR HENRY MEYER

BY

CAROLINE E. MACGILL AND A STAFF OF
COLLABORATORS



PETER SMITH

1948

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PREFACE.

The original plans for the Division of Transportation in the Department of Economics and Sociology of the Carnegie Institution of Washington and the work of collaboration were initiated by Professor William Z. Ripley. The work was therefore well begun. Early in 1905, the late Colonel Carroll D. Wright and Professor Ripley persuaded me to assume charge of the work. I expected then to be able personally to write these or similar contributions to the History of Transportation in the United States. A succession of events made this undertaking increasingly difficult, and I was finally compelled to content myself with exercising the functions of director and editor.

Special studies were prosecuted by different collaborators in different parts of the United States, of which the following were used in the preparation of the present volume:

1. BISHOP, A. L. *The State Works of Pennsylvania*. (Connecticut Academy of Arts and Sciences, 1907.)
2. HANEY, L. M. *Congressional History of Railways in the United States to 1850*, vol. 1. (University of Wisconsin, Bulletin No. 211. Economics and Political Science Series, vol. III, No. 2, 1908.)
3. CLEVELAND, F. A., and F. W. POWELL. *Railroad Promotion and Capitalization in the United States*. (Longmans Green & Company, 1909.)
4. PHILLIPS, U. B. *A History of Transportation in the Eastern Cotton Belt to 1860*. (Columbia University Press, The Macmillan Company, 1908.)
5. JONES, C. L. *The Economic History of the Anthracite-Tidewater Canals*. (University of Pennsylvania, Series in Political Economy and Public Law, No. 22, 1908.)
6. GEPHART, W. F. *Transportation and Industrial Development in the Middle West*. (Columbia University Studies in History, Economics and Public Law, xxxiv, No. 1, 1909.)
7. LUETSCHER, G. D. *Canals East of the Alleghany Mountains*. (Manuscript.)
8. BROWNSON, H. G. *History of the Illinois Central Railroad to 1870*.
9. WAY, R. B. *Internal Improvements, 1817-1840*. (Manuscript.)
10. GEPHART, W. F. *Transportation in Ohio*. (Manuscript.)
11. THOMPSON, G. G.:
 - (1) *Trade Routes and Means of Communication before 1820*. (Manuscript.)
 - (2) *Development and Conditions of Internal Trade, 1789-1820*. (Manuscript.)
 - (3) *Early Projects for Internal Improvements*. (Manuscript.)
 - (4) *The Cost of Transportation*. (Manuscript.) *Railroads in the United States, 1840-1850*. (Manuscript.)
 - (5) *Internal Improvements in the Southern States*. (Manuscript.)
 - (6) *Internal Improvements in the Middle Atlantic States*. (Manuscript.)
 - (7) *Internal Improvements in Pennsylvania*. (Manuscript.)
 - (8) Manuscript notes, from many sources, including a large number of topics.
12. FERRAR, KATHLEEN. Manuscript Notes.

In addition to the studies listed above, the following, published and unpublished, have been prepared up to the present time:

- ADAMS, ALTON D. *Railway Pools*.
CLEVELAND, F. A. *Railroad Finance*. 1912.
BUCK, SOLON G. *History of "the Granger Movement"*. 1913.
DOTEN, CARROLL G. *Recent Railway Accidents in the United States*. 1905.
POTTS, C. S. *Railroad Transportation in Texas*. 1909.
WELD, L. D. H. *Private Freight Cars and American Railways*. 1908.
WAY R. B. *History of Navigation on the Lower Mississippi*.
DAGGETT, STUART. *Railroad Reorganization*. 1908.

Several additional studies have been in progress, some of which are substantially completed, but not yet published. They are the following:

- TUNELL, G. G. *History of Transportation on the Great Lakes.*
MCLEAN, S. L. *Canadian Railways in their Relation to the United States.*
PHILLIPS, U. B. *Transportation in the Western Cotton Belt.*
YOUNG, F. G. *Development of Transportation in the Pacific Northwest.*

All of these special studies may well stand by themselves as independent contributions. All of them contribute material and interpretative views which I believe will be of assistance to every student in this general field.

After most of the completed studies listed above had been finished the accumulated material was placed in the hands of Miss Caroline E. MacGill, at that time of the University of Wisconsin, for elaboration into book form. Besides finished monographs, there were placed at her disposal various indexes, collections of notes, and partially completed manuscripts. It has been her function to weave these together and to fill in through her own studies whatever was necessary to give the volume continuity. In doing this work it has been impracticable in all cases for her to give specific and individual credit in the text to each of the authors of the various books and monographs utilized.

This volume must be viewed as a contribution rather than as a completed study. It seemed much better to utilize as far as possible all of the material which the various collaborators had brought together than to restrict the volume to only such material as would be required in producing a thoroughly systematic, unified, and closely knit book.

The work as it now stands has obvious defects, which I trust will not detract seriously from its usefulness to students of transportation. The conditions under which the entire work was done, together with limitations arising out of the condition of the appropriations, made it practically impossible to produce a work different from that which is here presented. This is not stated in an attitude of apology, but rather of explanation.

I am indebted to the Department of Historical Research of the Carnegie Institution for permission to use some of the maps prepared for its atlas of economic history by Professor R. H. Whitbeck, of the University of Wisconsin. The difficulty of correctly mapping the early railroads is very great. Many of the contemporary maps are notoriously inaccurate, and it is often impossible to get conclusive evidence that a road was really in operation in a given year and not merely in process of construction or projected. A careful comparison between the text and the railroad map of 1840 has been made, and it is satisfactory to find that the two agree in most particulars. In two cases regarding which the evidence is conflicting, the fact is indicated in a footnote.

Dr. Max O. Lorenz, associate statistician of the Interstate Commerce Commission, Dr. John Cummings, Bureau of the Census, and E. W. Hines, Esq., a member of the Louisville bar, and formerly an attorney of the Interstate Commerce Commission, have read carefully the entire manuscript, and many suggestions and improvements are due to their painstaking work.

Because of the public position I have occupied during the years this volume has been in preparation, it is proper to say that this work has been done solely in the interest of the production of the present history, without remuneration; nor have I any financial interest, direct or indirect, in the sale of the book.

Naturally I can not assume responsibility for the opinions and interpretative views of the various collaborators.

BALTHASAR HENRY MEYER.

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HISTORY OF TRANSPORTATION
IN THE UNITED STATES
BEFORE 1860

CHAPTER I.

EARLY TRAILS, ROADS, AND NATURAL WATERWAYS.

The Appalachian barrier, 3. The Wilderness Road, 7. The Cumberland Road, 12. Indiana and Illinois trails and roads, 19. Michigan trails and roads, 26. Kentucky and Tennessee trails and roads, 27. Early military roads and other roads constructed by the Federal Government, 31. Bridges and ferries, 37. Travelers' accounts of early roads, 50.

THE APPALACHIAN BARRIER.

The physiography of that part of the United States which was in process of settlement in the country's early decades was an important factor in determining the geographical distribution of the increasing population. The first settlements had been made in the narrow strip of land lying between the Appalachian Mountains and the Atlantic Ocean. In the earlier periods these settlements were necessarily isolated from each other, and they were compelled by the mountain wall to expand within the coastal region rather than into the interior. A few trails led into the back country, but almost throughout its entire length the mountain barrier was so difficult to overcome that when small settlements were finally established across the Alleghenies any sort of communication with the older colonies was infrequent and irregular. The development of these trans-Appalachian settlements was conditioned upon the development of ways and means of transportation. They needed the markets and the products of the East for the development of any economy except one of an essentially primitive and simple character. From 1750 to 1800, however, their isolation was scarcely broken, and their interests seem to have been local, or at least to have been little regarded by the more populous communities of the East. The early history of transportation, in its national aspects, is largely occupied with an account of efforts, originating sometimes in the East and sometimes in the West, to break through this mountain barrier and establish regular routes of travel connecting the Ohio and Mississippi Valleys with the Atlantic seaboard.

While the mountain wall behind interposed a formidable barrier to the development of transportation routes into the interior, the stretch of ocean separating the colonies from Europe provided an open trade-route to European markets, over which goods could be transported at less expense than they could be carried overland for distances which to-day seem inconsiderable. Having grown up along the Atlantic seaboard opposite Europe, in commercial dependence upon Europe, the colonies throughout the colonial period were commercially closer to Europe than they were to one another. Obviously, however, the continuous development of the sea-borne traffic itself was dependent upon the opening up of trade-routes into the interior, since the

seaboard communities could not themselves produce the commodities required by this traffic. Prior to the Revolution intercolonial commerce was inconsiderable, and intercolonial trade-routes, where they existed, were entirely inadequate.

It may be noted, however, that the mountain wall, which constituted a barrier to trade, was an important natural defense against enemies, and that the restriction of settlement to the eastward slope of the mountains proved advantageous to the colonists prior to the Revolution, not only by securing them against attack, but also by bringing them into closer contact with one another and by making possible cooperation in the furthering of their common interests.

The coastal plain, which slopes gently from the foot of the Appalachians to the sea, presents a comparatively level area, of low altitude, indented with numerous bays and estuaries, and traversed by many rivers, navigable to their fall-line and fed by branches leading into the mountain gaps and valleys. A study of the spread of settlement up to 1775 shows that the immigrant population ran up the river valleys as far as the fall-line, and there generally stopped. In some cases outlying settlements were established beyond this line, and the beginnings of settlement are discoverable in the mountains themselves and even in the trans-Appalachian region; but not until after the Revolution did the tide of migration, originating in the population of the older settlements and in the immigrant flow of arrivals fresh from Europe, begin to set strongly towards the country beyond the mountains. The opening up of transportation routes to provide for this westward drift of population and for moving the increasing volume of products from the interior out to the coast cities became at once a matter of absorbing interest and was destined to constitute for many years a dominant issue in national politics, involving the economic welfare and growth of every section of the country.

The Appalachian system, which barred the spread of settlement at the fall-line, extended from the Green Mountains of Vermont to the pine-hills of Alabama. Its parallel ranges occupied a region some 300 miles in width and 1,300 long. The forests and exceedingly dense undergrowth which covered the mountains increased the difficulty of passage, while the rivers of the eastern slope, since they were not navigable far back from the coast, afforded no ready access to the interior. These rivers, however, when followed to their headwaters, revealed excellent passes. Especially was this true of the southern section, although in this section—where range after range of mountains, with intervening valleys, had to be traversed to reach the western country—the routes were long and roundabout.

In Pennsylvania the chief route to the Ohio followed the West Branch of the Susquehanna. Farther south was another route by the Juniata to a tributary of the Allegheny. Virginians went up a more

direct way, by the valley of the Potomac and a short portage to the Youghiogeny. Other routes lay up the James River and down the Great Valley to the Greenbrier and Kanawha, or by Cumberland Gap into Kentucky, where the famous "Warrior's Path" led to the Ohio. An almost level route among the low hills of the southern end of the Alleghenies was too far south to have more than a limited use.¹

At the date of the first census, 1790, the territory of the United States extended from the Atlantic seaboard to the Mississippi River, embracing an area of 867,980 square miles and a population of 3,929,214. The census enumerated 109,368 persons within the present boundaries of Kentucky and Tennessee, but not over 5 per cent of the population lived west of the Appalachian Mountains, the geographic distribution of the population giving an average depth of settlement, or distance of habitation from the coast, of 255 miles.² Excepting the population enumerated, as stated above, in the region of Kentucky and Tennessee, practically the total population returned in 1790 lived within the boundaries, as fixed to-day, of the Atlantic seaboard States north of Florida. The Louisiana Purchase in 1803 added 827,987 square miles, extending the territory west of the Mississippi and nearly doubling its extent. Florida was annexed in 1819. In 1790, population per square mile of area averaged 1.8 in Kentucky and 0.8 in Tennessee.

The interlacing headwaters of the rivers, flowing eastward to the Atlantic or westward to the Ohio, were separated at the source by various divides only, and hence formed natural pathways across the mountains. By following up the course of the Susquehanna, for example, or of the Juniata, the Potomac, the James, or the Roanoke, and turning up a lateral branch, the first explorers were able to find an outlet to the West, over a notched gap or low watershed, to a transverse river within the valley, at whose source they would be able to cross to some westward-flowing stream. Through the Unaka Mountains the eastern headwaters of the Tennessee forced a way in deep gorges, but this passage was extremely hazardous, since, in addition to difficult natural barriers, there was the pressure of the hostile Cherokees. For a hundred years the tide of migration was turned away from this passage. In the north, the easiest pathway to the West, the Mohawk Valley, was slowly settled, because of danger from French aggression and from the tribes of the Long House.

The westward route used first, because of its comparative ease and safety, was in eastern Pennsylvania, where numerous breaks in the mountain wall enabled settlers to penetrate into the Cumberland and Lebanon Valleys, while traders pushed westward up the Susquehanna and Juniata, and thence by branches whose headwaters interlaced with the Youghiogeny. Thence they followed the line of least resistance

¹Sample, *American History and its Geographic Conditions*, 38-39, 55.

²U. S. Census 1910, *Population*, I, 25.

southward into the Valley of Virginia, while some went on through passages made by the Roanoke to the headwaters of the Yadkin, in the Piedmont of North Carolina. The early westward movement, therefore, was participated in mainly by the four States of Pennsylvania, Maryland, Virginia, and North Carolina. North and south of these the advance was checked by the Indians—on the Georgia frontier as late as 1820.

In general, the development of roads across the mountains and in the Ohio region followed the lines of the old Indian trails.¹ Although the Indian often preferred a water route, for most purposes he used a land route. The more important of these trails ran north and south, following in a general way the river courses, but there were several important east-and-west trails. Probably these trails were originally made by animals, but they became, through a process of adaptation, first Indian trails, then roads of the early settlers, and later the commercial highways of the State. Although in a measure valley trails, they were located far enough from the streams to reach in most places the high ground, and were from this fact properly called highways. These trails followed the water divides,² and their origin at those points on the Ohio River which communicated with the settled portions of Kentucky, Maryland, Virginia, and Pennsylvania afforded a convenient and ready route to the Northwest Territory.

Pittsburgh, Cincinnati, Marietta, and Detroit were the earliest towns settled in the West and became important points of vantage in conquering and settling the territory through which the trails passed. Incidentally it is interesting and significant that the routes of all the main trails are to-day occupied by important railway lines. The New York Central and the Lake Shore follow the old Lake Shore Trail; the Pennsylvania follows the old Mahoning Trail; the Toledo and Ohio Central follows the Monongahela Trail; the Baltimore and Ohio follows the Great or Big Trail; another Pennsylvania line follows the Moravia-Scioto-Beaver Trail; the Hocking Valley, the Sandusky-Richmond Trail; the Norfolk and Western follows the Scioto Trail; the Cincinnati, Hamilton and Dayton follows the Miami Trail; the Lake Erie and Wheeling, the Muskingum Trail. It is also worthy of note that these were among the first railways constructed and were suited, as the trails were, to form the basis of our modern railway systems, since these locations have been topographically, economically, and socially justified in the continuous development of commercial service for a rapidly increasing population and volume of traffic.

¹See Gephart, *Transportation and Industrial Development in the Middle West*, in *Columbia University Studies in History, Economics, and Public Law*, XXXIV, 23-24. This monograph was prepared as a contribution to the History of Transportation.

²See map facing p. 25 of Dr. Gephart's book.

When the westward migration had increased sufficiently in volume to establish definite routes, the more important of these routes, their course being determined by the topography of the country, converged at two points, namely, Pittsburgh and Cumberland Gap. Three routes met at Pittsburgh. One ran from Philadelphia by the West Branch and a 40-mile portage over the divide, and by Toby Creek to the Allegheny at Kittanning. A more southern route went from Philadelphia, either by the Juniata or by a straighter path known as Forbes's Road from Carlisle through Shippensburg, Fort Littleton, and Fort Bedford to the upper Juniata, thence by an easy mountain pass to the Loyalhanna River by Fort Ligonier, and on down the Allegheny or across a low divide to the Ohio. The third was the natural line from Alexandria and Baltimore, which led up the Potomac to Fort Cumberland and thence by Braddock's Road to the Youghioghenny, or to Redstone Old Fort on the Monongahela. Cumberland Gap, the point of convergence for southern routes, was the natural avenue to the West from Virginia and other southern settlements, and was preferred by many who set out from Philadelphia when traveling with not too much baggage. There was an intervening trail from the James River to the Kanawha, but this was more dangerous and more exposed to Indian attack than the Cumberland Gap path. Roads from Philadelphia and Richmond joined at Fort Chissel, the initial point of the Wilderness Road.

THE WILDERNESS ROAD.

The two roads just mentioned, as well as other roads over the mountains, became famous in the annals of pioneering and settlement. The Cumberland Road was a great national enterprise, while the Wilderness Road was chiefly what constant travel made it.

The Wilderness Road figures more prominently in early story and romance than any other route across the mountains, because of the important part it played in the settlement of the West in providing a way for the movement of population down the Great Valley to the headwaters of the Holston and Watauga, and thence into Kentucky and Tennessee via Cumberland Gap. By 1790 Kentucky had a population of nearly 75,000 inhabitants, more than nine-tenths of whom had come in by way of the Wilderness Road. In 1792 this Territory was admitted to the Union as a State, and 8 years later, in 1800, her population amounted to more than 220,000, having nearly doubled during the decade. A large proportion of the increase of nearly 150,000 had entered the State during the decade, 1790-1800, by the Wilderness Road. It was this moving host that gradually wore a spotted trail into an immigrant path, a pack-horse route, and a wagon-road.

A trace or trail for pack-horses already existed, leading from the headwaters of the Shenandoah and the James to those of the Holston

and the Watauga. In 1774-75 Daniel Boone "blazed" a path from the settlements on these rivers through Cumberland Gap and across Kentucky to the Falls of the Ohio, at the present site of Louisville.¹ No practicable through route existed at that time from the Atlantic to the Ohio Valley, between Cumberland Gap and Pittsburgh.

On March 10, 1775, Boone and his party left Long Island,² in the Holston River, marking their track with hatchets. They crossed Clinch and Powell's River, passed through the gap, and from there followed the "Warrior's Path"³ about 50 miles. Thence their route bore a more westerly course to the "Hazel Patch" and to Rockcastle River along a buffalo trace. From Rockcastle River, still following the trace, it went up Roundstone Creek, through Boone's Gap in Big Hill, and through the present county of Madison down the course of Otter Creek to its mouth at Kentucky River. About a mile below the mouth of Otter Creek, Boone established his fort and called it Boonesborough. The total distance traversed and marked out as an eligible line of travel from Watauga to Boonesborough was over 200 miles.⁴

Benjamin Logan, following in the same season, "instead of continuing along the Boone trace to Kentucky River . . . took the trace which bore more westwardly and in the direction of the Crab Orchard." This latter route was the one which Boone himself had traversed when he visited the Falls of the Ohio prior to 1775.⁵ It led via Crab Orchard, Danville, Bardstown, and Bullitt's Lick to the Falls of the Ohio, and eventually became the more important of the two branches of the Wilderness Road. The Boone trace to the Kentucky River led into the heart of the Bluegrass region. Both branches were great highways of pioneer travel, and after Boone, Henderson, and Logan many explorers and emigrants passed over the trail.⁵

As marked out at first, this was but a trace, and no vehicle of any sort passed over it until some years later, when it was converted into a wagon-road. The route was, however, well located, and, recognizing the necessity for a wagon-road to Kentucky, the legislature of Virginia in 1779 passed an act by which "commissioners were appointed to explore the country on both sides of the mountains, and trace out the most convenient site for the road, and cause it to be cleared and opened, so as to give for the present passage for travelers and pack-horses, and report the practicability of making a wagon-road." No

¹Boone had been engaged to mark out this road by Col. Richard Henderson, the head of a land company which had purchased from the Cherokees the land between the Ohio, Cumberland, and Kentucky Rivers. Boone followed the route of an old trail, through the gap. Speed, *The Wilderness Road*, 25-26.

²Sometimes called "The Great Island." See Morse, *American Geography* (ed. of 1789), p. 275.

³The "Warrior's Path" was a trail over which the Indians traveled to and from their towns on the Miami and Scioto Rivers on their hunting excursions and in case of war. "It ran in an almost direct north course from Cumberland Gap across the east end of Kentucky to the mouth of the Scioto River." Speed, *The Wilderness Road*, 26; see also map in Hulbert, *Historic Highways*, VI, 118-119.

⁴Speed, *The Wilderness Road*, 26.

⁵*Ibid.*, 27.

improvement was accomplished, however, for 12 years. In 1792, by private enterprise, money was raised and expended for the clearing and improvement of the road. The work extended over 22 days in the summer of that year. In 1794 an act was passed by the legislature of the State appointing commissioners to raise a fund for clearing a road from Madison Court House to Hazel Patch, *i. e.*, over a portion of Boone's road. In 1795 the legislature passed "An act opening a wagon road to Cumberland Gap." The road was to commence in the neighborhood of the Crab Orchard and run thence through the Hazel Patch and "terminate on the top of Cumberland Mountain, in the gap through which the present road passes." It was to be made 30 feet wide and perfectly commodious for carriages and wagons carrying as much as 1 ton weight.¹

Collins writes as follows:

"In 1797 the legislature appropriated five hundred pounds for the repair of the road and the erection of a toll-gate or turnpike, as it is called in the act. After that date many appropriations were made for the improvement of the road. It came to be called the Wilderness Turnpike, but it never became such a road as the term 'turnpike' usually signifies. It was only a natural mountain road, worked and repaired and furnished with bridges and ferries."²

In spite of all that had been done for the road since Boone traced its course, it remained up to 1812 much as it was in the beginning.

The itinerary of a journey made by one William Brown in 1782 from Hanover, Maryland, to Harrodsburg, Kentucky, a distance of 555 miles, is of interest for its details of travel westward at this time. Brown set out from Hanover May 27, and arrived at the block-house near the North Fork of the Holston about the first week in July. He found the road generally good, the crossing of neither the Blue Ridge nor the Allegheny Mountains being difficult. After a delay of nearly two weeks, the party set out for the wilderness July 18. The road from the block-house until over Wallen's Ridge was generally bad, the portion about Stock Creek and Stock Creek Ridge very much so. The fords of the Clinch and Holston were said to be both good in dry weather, but often required rafting across in a rainy season. Thence along down Powell's Valley to Cumberland Gap the road was "pretty good." The way through the gap was described as being "not very difficult," but in some places much exposed to attack "by the enemy." From Cumberland Gap until across Rockcastle River there was very little good road. The fords of the Cumberland and Rockcastle Rivers were said to be "both good unless the waters be too high." After crossing Rockcastle River there were a few high hills and the rest of the way was tolerably good. The party arrived at Harrodsburg July 29.³

¹Speed, *The Wilderness Road*, 51; Hulbert, *Historic Highways*, VI, 203.

²Collins, *Historical Sketches of Kentucky*, II, 242; Hulbert, *Historic Highways*, VI, 204.

³Speed, *The Wilderness Road*, 19, 20.

Accounts by other and contemporaneous travelers, however, picture a more difficult and hazardous route, beset with many hardships and the constant danger of attacks from hostile Indians. "From the Potomac to New River, along the valley, travel was not attended with difficulty or danger of any consequence. The wild, rough, and dangerous part of the journey commenced when New River was crossed at Inglis's Ferry and the travelers turned squarely toward the setting sun to make their way across the mountains and streams through the 'uninhabited country.'"

That this route to Kentucky, difficult as it was, should, as asserted by Imlay, have been found preferable to the route by the Ohio River, proves how perilous was the journey by the latter route. The river route was, nevertheless, used to a greater or less extent by settlers moving into the western country. For the return trip from Kentucky the water route was impracticable, and the Wilderness Road or some other land route was necessarily followed. Traces existed across the mountain from the Valley of Virginia into northeastern Kentucky, but no traveled way led across the mountains in that region. A route passable for live-stock led from Morgantown to Belleville, Virginia, and travelers from Marietta to the East also passed that way.

Where the road down the Great Valley intersected the waters of New River, another road which led out from Richmond through the central parts of Virginia joined it. Near this junction was located Fort Chissel, at a distance of approximately 200 miles from Cumberland Gap. At this point routes to the western country united and migration flowed thence in a single stream.¹ Besides the two roads that united at Fort Chissel "there were other traveled ways or traces which led up to Cumberland Gap from the Carolinas and through the mountains of East Tennessee."²

Another route closely connected with the Wilderness Road was of considerable importance in the settlement of the country in the vicinity of the Great Bend of the Cumberland in Tennessee and of southwestern Kentucky. Previous to 1783 travel to these sections had been over Boone's road to the Rockcastle hills and thence southward over a trace to the settlement where Nashville now stands. In 1783, however, a road for horsemen and wagons was opened from Clinch River directly to that point. This road separated from the Wilderness Road south of the crossing at Inglis's Ferry on New River, passed down the East Tennessee Valley to the lower end of Clinch Mountain, and from thence led across the country by way of Crab Orchard in Tennessee to Nashville. Emigrants by this route to Kentucky followed it as far as Gallatin, Tennessee, near which point they crossed the Cumberland

¹Speed, *The Wilderness Road*, 12-13; see also chap. iii below.

²*Ibid.*, 16. See *Ibid.*, 21, for accounts of two such roads.

River and passed into southern Kentucky. It long continued a route of communication between that section and the Atlantic States.¹

When first constructed, this road lay within what was then considered a part of North Carolina. Morse, in his *American Geography* (1789), describing the road, calls it a "new road" running from Nashville in Davidson County (then in North Carolina), to Fort Campbell, near the junction of the Holston River with the Tennessee. "By this new road a pleasant passage may be had to the western country with carriages, as there will be only the Cumberland Mountain to pass; and that is easy of ascent, and beyond it the road is generally level and firm, abounding with fine springs of water."² The point of connection of this road with the Wilderness Road was at "Great Island," which, as has been pointed out above, is identical with Long Island, the very point from which Boone and his party began to cut their way across the Wilderness. Table 1, giving a description of the road, with its northern extensions via Abingdon and to Richmond, is furnished by Morse:²

TABLE 1.

From Nashville:	Miles.	From Grovet's Creek.....	Miles.
To Big Spring.....	6	To the foot of the Cumberland Moun-	7
Cedar Lick.....	4	tains.....	2
Stony River.....	9	Through the mountain to Emmeries	
Little Spring.....	6	River, a branch of the Pelison..	11
Barton's Creek.....	4	To Pappa Ford of the Pelison or Clinch	
Spring Creek.....	5	River.....	12
Martin's Spring.....	5	Campbell's Station near Holston..	10
Blair's Spring.....	5	The Great Island.....	100
Buck Spring.....	12	Abingdon, in Washington County..	35
Fountaines.....	8	Richmond, in Virginia.....	280
Smith's Creek.....	6		
Coney River.....	11	Total.....	605
Mine Lick.....	9		
Falling Creek.....	9		
War Path.....	7		
Bear Creek.....	18		
Camp Creek.....	8		
King's Spring.....	16		

Contemporaneous maps of these early roads show that, in keeping with their primitive character, there were in many sections by-routes, any one of which might be regarded as constituting a portion of the main thoroughfare. Accordingly, no two itineraries of the same general course are likely to agree entirely in detail. It can not be doubted, however, that the route here described by Morse is in the main the road to the Cumberland country described by Speed.

Various other traces had been marked out in Kentucky. William Brown furnishes a description (table 2) of a route from Limestone to Mount Gilead, Nolin Creek, in 1790,³ which constituted a line of approach into Kentucky from the Ohio River.

¹Speed, *The Wilderness Road*, 63-65.

²Speed, *The Wilderness Road*, 59.

³Morse, *American Geography* (1789), p. 421.

TABLE 2.

	Miles.		Miles.
To Washington T, Washington County...	4	To Beech Fork, Nelson County, of Salt	
Mays Lick.....	4	River.....	13
Blue Lick.....	12	Bardstown.....	7
Bourbon T, Bourbon County.....	20	Beech Fork again.....	1
Lexington T, Fayette County.....	20	Rolling Fork of Salt River.....	20
Curd's Ferry across Kentucky River, at		Mount Gilead, Nolin Creek.....	10
mouth of Dick's River.....	22		
Harrodsburg, Lincoln County.....	11	From Limestone to Mount Gilead is.....	171
Wilson Station.....	27		

The importance of the Wilderness Road in the settlement and development of the trans-Appalachian region has been frequently emphasized in the literature dealing with the early pioneer period.

Speed, in *The Wilderness Road*, pp. 74-75, writes concerning the movement of population made possible by this road from 1775 to 1795:

"It established the power of the white man in the western country. It pierced and broke the center of the barriers which had barred the West against occupation. It divided the Indians in the North from those in the South. It operated as a flank movement upon the powerful tribes which occupied the choicest parts of New York and Pennsylvania, and caused them to give way before the advance of civilization. It made the vast territory of the Northwest, then including Ohio, Indiana, and Illinois, vulnerable to settlement. It opened the way to Tennessee and Alabama, and so crowded the Cherokee Indians in the mountain fastnesses of Northern Georgia that they eventually accepted removal beyond the Mississippi. . . . The direct benefit of the movement which marked out the wilderness trace and trod it into a road did not stop at Boonesboro or the Falls of the Ohio. It extended northward, southward and westward. It sent its reflex influence back to the seacoast States, and led them all forward to possess the great empire of the West."

By this route went "the silent procession of men, women, and children who conquered the Ohio River and made possible the Louisiana Purchase and an American empire on the Pacific."¹

THE CUMBERLAND ROAD.

As in the case of other similar roads, the motive underneath the effort to initiate and complete the Cumberland Road is found in the need of a better land route to the West. Its construction by the Federal Government was made possible by the surrender of the conflicting State claims to the territory northwest of the Ohio, and followed the organization of that region as national territory. Concerning this Young writes:

"Military necessity, private initiative and small appropriations by States immediately concerned were not sufficient for the construction of a good road over the mountains through a sparsely settled intervening country. As no

Brigham, "The Great Roads Across the Appalachians," in *American Geographic Society Bulletin*, XXXVII, 339; see also Hulbert, *Historic Highways*, VI, 205; Allen, *The Blue-grass Region of Kentucky*, 251-262.

single State was financially able or willing to undertake such a work, attention was turned to the Treasury of the United States; but strict construction of the Constitution and hard times acted as a bar. The first solution—only a partial one—was reached by enlisting the proprietary power of the United States through a use of the public domain for this purpose. As the United States had no public domain south of the Ohio at the beginning of the nineteenth century, the scene for road-building shifted from the Wilderness Road to a section where the United States owned land.”¹

In respect to the physical location of the road itself, its history is but the continuation of the story of the Washington and Braddock Roads through Great Meadows from the Potomac to the Ohio. Braddock's Road, however, for “three score years the only route westward through southwestern Pennsylvania, . . . grew worse and worse with each year's travel . . . and the rapid peopling of the State of Ohio and the promise of an equal development in Indiana and Illinois” led to its replacement by a national turnpike.² Upon the admission of Ohio to the Union in 1803, 5 per cent of the net proceeds of the sale of public lands within that State were set apart for the laying out and making of roads, 3 per cent of which should be expended on roads within the State under the direction of the State legislature, leaving the other 2 per cent as a fund to be expended under the direction of Congress for the construction of roads to and through the State. The Cumberland Road fund thus “originated in a ‘compact’ between the United States and the State of Ohio” and “was intended to settle two difficulties: (1) to provide a fund for a road to the West; (2) to avoid friction with the State of Ohio in regard to the ‘primary disposal’ of Federal lands.”³

Various attempts were made to begin the work, but without success. By 1806 the demands of the western country for better communication with the East grew so strong that Congress was practically forced to take some action. The laying out of Zane's Trace in 1797, together with the establishment of mail-routes to the West, had already involved the Federal Government in the general problem, and there was no drawing back once the work had been begun.⁴ In December 1805 a Senate committee was appointed to bring in a report on the enabling act of Ohio and the 2 per cent fund. According to this report, the 2 per cent fund by that time amounted to \$12,652. The laying-out and making of a road “from Cumberland on the northerly bank of the Potomac, and within the State of Maryland, to the Ohio River at the most convenient place on the easterly bank of said river, opposite to Steubenville and the mouth of Grave Creek, which empties into said river

¹Young, *A Political and Constitutional Study of the Cumberland Road*, 12-13.

²Hulbert, *Historic Highways*, X, 17-19.

³Young, *A Political and Constitutional Study of the Cumberland Road*, 15.

⁴*Ibid.*, 15-19; see also Earle, *Stage Coach and Tavern Days*, 232.

Ohio, a little below Wheeling in Virginia," was recommended. In favor of the location recommended, it was asserted that this route would meet and accommodate roads from Baltimore and the District of Columbia; that it would cross the Monongahela at or near Brownsville or Redstone, where advantage could be taken of navigation; and that there were other roads already made or easily feasible from the probable point of intersection of the proposed road with the Ohio River, to and through the best-populated regions of the State of Ohio.

As explanatory of the route recommended, the committee noted that Pennsylvania was already engaged in making roads from Philadelphia to Pittsburgh and the western part of the State, and that Maryland was engaged in constructing roads from the western boundary of the District of Columbia through Fredericktown to Williamsport, and that the State of Pennsylvania was interested in extending her roads to Pittsburgh and the West, while Maryland had no particular interest to extend her road across the mountains, even had the limits of her territory permitted. It was thus deemed best that the proposed road should constitute a continuation of the Maryland road.¹

The report was accepted, and on March 29, 1806, "An act to regulate the laying out and making of a road from Cumberland in the State of Maryland to the State of Ohio" was approved. The act authorized the President, with the advice and consent of the Senate, to appoint three disinterested citizens as a board of commissioners to lay out the road, under the restrictions of the act as to termini, and limited by certain other administrative restrictions in the act. In the first report of the commissioners the objects governing in the selection of a route were stated to be: (1) shortness of distance between the navigable points on the eastern and western waters; (2) the best method of diffusing benefits with the least distance of road; (3) a consideration of the comparative merits of towns and settlements with present and prospective populations.²

Though the inhabitants of the various sections which were possible competitors for the location of the road were not slow in proclaiming the advantages offered for a route in their particular locality, the commissioners recommended a route following in general the course of Braddock's Road.³ The consent of the State of Pennsylvania had, however, not yet been obtained. The people of that State, and par-

¹*American State Papers, Miscellaneous*, I, 432.

²*Ibid.*, 432, 474.

³Young, *A Political and Constitutional Study of the Cumberland Road*, 32. The commissioners, however, January 15, 1808, reported on the location, gradation, and marking of the road, from Cumberland to Brownsville, Bridgeport, and the Monongahela River, stating that "from the crooked and hilly course of the road now travelled the new route could not be made to occupy any part of it (except an intersection in Will's Mountain, another at Jesse Tomlinson's, and a third near Big Youghiogheny, embracing not a mile of distance in the whole) without unnecessary sacrifices of distances and expense." The location favored in the report made a saving of 4 miles between Cumberland and Brownsville, when compared with the road then traveled. *American State Papers, Miscellaneous*, I, 714.

ticularly of Philadelphia,¹ jealous of the western trade and believing that the road was being "constructed in the direct interests of Baltimore," withheld consent to the construction of the road through that State until April 9, 1807, when an act was passed by the legislature granting that consent, but on the condition that the location of the road be changed so as to pass through Uniontown in Fayette County and Washington in the county of the same name, if in the opinion of the President such alteration could be made consistently with the provisions of the original act of March 29, 1806.²

In the end the road was located in accordance with the wishes of the people and legislature of the State of Pennsylvania.³ An old road between Uniontown and Brownsville had been laid out in 1774 by viewers appointed by the court of Westmoreland County, Pennsylvania, before Fayette County was established, in consequence of a petition signed mainly by the inhabitants of Brownsville.⁴ This road, when constructed, was carried east of Uniontown to intersect Braddock's Road near Slack's tavern. Between Uniontown and Brownsville the route of the Cumberland Road closely followed the line of this old road. In a contest between Steubenville and Wheeling as to the terminal point of the road on the Ohio, the latter won through the efforts of Henry Clay. The location of the road as far as the Ohio was thus determined by 1811.⁵

The following account is given by Searight, in *The Old Pike*:

"The first contracts in sections for the first 10 miles of the road west of Cumberland were signed April 16 and May 8, 1811, and were finished in the fall of 1812. The next letting was in August, 1812, of 11 miles, extending west as far as Tomlinson's, and these contracts were completed early in 1815. The work was let from Tomlinson's to Smithfield, 18 miles, in August, 1813, and completed in 1817. The delay was caused by the scarcity of laborers during the war, war prices, and apprehension of failure of some of the contractors. The next letting was in September, 1815, embracing the work 6½ miles westward from Smithfield. . . . In May 1817, the work was let to

¹See Gallatin, *Writings* (Adams's ed.), I, 334, 370. Gallatin's attitude toward the road, as well as his anticipations in regard to its utility, is shown by the following: "The immense importance of that road as part of a great Western travelling road and principally as the main communication for the transportation of all the foreign or Atlantic articles which the Western States consume and even for the carriage of western flour and produce to the Potomac, induce one strongly to wish that that part particularly which lies between the Potomac and the Monongahela may be completed in the most substantial manner. . . . Ten thousand tons will be carried westwardly annually and perhaps one hundred thousand barrels of flour brought back. I think the annual saving in expenses of transportation will exceed two hundred thousand dollars." Gallatin to Jefferson, April 13, 1807, in Gallatin, *Writings* (Adams's ed.), I, 334-335.

²Young, *A Political and Constitutional Study of the Cumberland Road*, 21, 22. New York favored the Cumberland Road until 1817, when Congress finally refused to aid in the construction of the Erie Canal. The road was feared as a rival of the canal. Way, *Thesis MSS.*, chap. v, 5.

³Young, *A Political and Constitutional Study of the Cumberland Road*, 22-23.

⁴The inhabitants of Brownsville complained that they were compelled to carry their corn 20 miles to a mill at Uniontown, over a road known as Burd's Road, from the mouth of Redstone Creek and the intersecting Braddock's Road at Gist's. Searight, *The Old Pike*, 244.

⁵Young, *A Political and Constitutional Study of the Cumberland Road*, 23.

Uniontown. . . . From Uniontown to Brownsville, portions were let in September, 1815, to Kinkaid, Beck and Evans, who soon thereafter undertook the residue to Brubaker's. This firm sublet many sections of the work. Bond and Gormley had the contract from Brubaker's to Brownsville, and their work was completed in 1818. . . . The whole line of the road, for the purposes of construction, was laid off in two divisions, called Eastern and Western. . . . The dividing-line between the two divisions was Brubaker's, near, and east of, Brownsville.

"In March 1817, the greater part of the work, from a point 2 miles east of Washington to the Virginia line, was let. . . . In 1819 the same gentlemen contracted to do the work, from the point first above named, to a point 2 miles west of Brownsville.

"The road was completed from Cumberland to Uniontown at a cost, including all expenses of survey and location, salaries, bridges, and some repairs, of \$9,745 per mile. The average cost of the entire road to Wheeling was nearly \$13,000 per mile, showing the eastern division much less costly than the western. This was charged to some prodigality of work and too liberal contracts. . . ."¹

According to the act of March 29, 1806, the road was to be cleared of timber to the width of 4 rods. By 1808 the road had been cleared one-half of the required width from Cumberland, Maryland, to Brownsville, Pennsylvania. In 1816 the necessary part of the work was finished to the Big Youghiogeny River.² The road was opened for traffic to the Ohio River at Wheeling in 1818,³ although not entirely completed at that time, as the letting of contracts after that date shows.⁴

The total appropriations to 1823 were \$1,718,846.35. The expenditures amounted to \$1,645,679.20, as follows: surveying and locating, \$29,144.25; construction \$1,544,882.70; repairs, \$16,160.19; salaries to superintendents and assistants, \$53,034.61; miscellaneous, \$2,457.45.⁵ The length of the road from Cumberland to Wheeling was 130 miles.

By the first act of Congress relating to the road it was, as noted above, to be cleared of timber to the width of 4 rods. The act further provided that the roadway should be raised in the middle with stone, earth, or gravel and sand, leaving a ditch on either side, and that when finished there was to be no angle greater than 5 degrees to the horizon. Other specifications in reference to the manner of constructing the road were left to the discretion of the President.⁶ The first contracts provided for a stratum of stone 15 inches thick, the stones

¹Searight, *The Old Pike*, 319-320. Special contracts were made for the construction of bridges. See *American State Papers, Miscellaneous*, II, 175.

²Searight, *The Old Pike*, 182; Young, *A Political and Constitutional Study of the Cumberland Road*, 32.

³Young, *A Political and Constitutional Study of the Cumberland Road*, 32; see also Hulbert, *Historic Highways*, X, 70. "The great western mail and stages from Washington City to Wheeling, on the national turnpike, arrived in Brownsville—for the first time—on Wednesday last." *Niles' Register*, XIV, 439, Aug. 22, 1818, quoting a Brownsville newspaper, Aug. 10, 1818.

⁴See above; also Searight, *The Old Pike*, 101.

⁵Young, *A Political and Constitutional Study of the Cumberland Road*, 32; *American State Papers, Miscellaneous*, II, 1042.

⁶Young, *A Political and Constitutional Study of the Cumberland Road*, 31.

being of such size as to pass through a 3-inch ring.¹ It was 60 feet wide. The stone was covered with gravel and rolled down with an iron roller.²

At average distances of 15 miles toll-houses were erected and "strong iron gates hung to massive iron posts were established to enforce the payment of toll in cases of necessity." As a rule, however, there was little difficulty in collecting tolls, as the road was usually kept in good condition.³ Measures were early taken to keep the road in repair. The superintendent reported December 30, 1816, that the repairs made the past summer upon the first 6 sections, comprising about 16 miles, had cost \$1,200, and that these repairs had rendered the road nearly as perfect as when first made. The report continues:

"Early next summer a considerable extent of road will be received from the contractors, when the expense of repairs will be much increased and when it appears to me essential that some regular plan be adopted, as well with a view of keeping the road in perfect order, as to diminish the probable expenditures by the timely application of a remedy."⁴

Owing to the financial embarrassments of the national treasury, it was not until 1822 that an attempt was made to carry out this suggestion. In that year a bill was introduced authorizing the President to cause toll-houses, gates, and turnpikes to be constructed on the Cumberland Road, and to appoint toll-gatherers, with power to enforce the collection of tolls to be used for the preservation of the road. The bill passed both Houses of Congress only to be vetoed by President Monroe on the ground of unconstitutionality, because it involved the question of jurisdiction as well as of construction, though he maintained that Congress had unlimited power to raise money and a discretionary power to appropriate it for national purposes. The veto having been sustained, an act was passed the following year making appropriations for the repair of the road without reference to the taking of toll and without involving the question of jurisdiction.⁵

Although the period previous to the year 1820 is concerned mainly with that part of the Cumberland Road east of the Ohio River, the road was from the first expected to be continued from that point. Jefferson's idea was that it "would pass west of the Ohio through Chillicothe, Lebanon, and Hamilton in Ohio and connect with the military road leading through Vincennes to St. Louis."⁶ The road, when built, did not follow this route, but an act was passed by Congress, May 15, 1820, appropriating \$10,000 for laying out the road between Wheeling and a point on the left bank of the Mississippi River,

¹Searight, *The Old Pike*, 374; Letter from Treasury Department, by Gallatin.

²Earle, *Stage Coach and Tavern Days*, 232.

³Searight, *The Old Pike*, 18.

⁴*American State Papers, Miscellaneous*, II, 297.

⁵Turner, *Rise of the New West, 1819-1829*, pp. 230-231.

⁶Young, *A Political and Constitutional Study of the Cumberland Road*, 23-24.

between St. Louis and the mouth of the Illinois River, thus initiating the enterprise in its second stage.¹

Immediately after being opened to the Ohio River, the Cumberland Road became one of the chief avenues to the West. A flow of traffic swept over the great highway immediately upon its completion.² It enabled goods to be hauled from Baltimore to the Ohio at a considerable reduction in the cost of transportation and thus enabled that city to increase her trade in the western country, somewhat at the expense of Philadelphia.³ Wheeling, too, was much benefited for a time. It was said that in 1822 a single one of the five commission houses at Wheeling unloaded 1,081 wagons, and paid for the freightage of goods the sum of \$90,000.

In addition to the old taverns where the road followed former routes, there sprang up many new taverns, and all were crowded with travelers.⁴ Its greatest utility was, however, in the transmission of the mails.⁵ For this purpose speed was the first desideratum, and the solid road-bed and low grades, as well as the direct route of the Cumberland Road, made it the natural avenue for the transportation of the great western mail from Washington City. The road was also traveled by Congressmen and other public men from the West on the way to and from Washington City. It has been pointed out, however, that most of the travelers from foreign countries who visited our country soon after the road was completed to the Ohio River passed to the West by way of the old Pennsylvania Road.⁶ This was probably due in part to the fact that the latter led from Philadelphia and passed through a larger number of important towns, including Pittsburgh at the terminus. By passing from the latter city to Washington, Pennsylvania, the Cumberland Road was reached and could be followed on to the Ohio River; and not a few of those passing over the Pennsylvania Road passed from Pittsburgh westward by this latter route.⁷

¹United States, *Statutes at Large*, III, 604.

²Hulbert, *Historic Highways*, X, 54.

³It is stated in Turner, *Rise of the New West, 1819-1829*, p. 100, that the construction of the Cumberland Road reduced freight rates to nearly one-half of what they were at the close of the War of 1812. This can hardly be substantiated. The cost of transportation was abnormally high in 1815, and the lowered cost a few years later was due only in part to the construction of the Cumberland Road.

⁴Hulbert, *Historic Highways*, X, 152-173; also Searight, *The Old Pike*, chaps. xxvi-xl.

⁵Young, *A Political and Constitutional Study of the Cumberland Road*, 106.

⁶Hulbert, *Historic Highways*, X, 142-151, 182-183.

⁷Searight, *The Old Pike*, 322; see map of the entire road in Young, *A Political and Constitutional Study of the Cumberland Road*, and of the road in Maryland, Pennsylvania, and Virginia in Hulbert, *Historic Highways*, X, 55; see Craig, *The Olden Time*, II, between pages 528 and 529 for a map comparing the routes of Braddock's and Cumberland Roads. The map of Braddock's Road is by Middleton, 1755; see also Ohio Archeological and Historical Society, *Publications*, IX, 422, for reprint of the same; see Searight, *The Old Pike*, Appendix, for laws of Pennsylvania relating to road; see also Hulbert, *Historic Highways*, X, 24-25, 73-76, 90, for statements of appropriations by Congress.

INDIANA AND ILLINOIS TRAILS AND ROADS.

The Territory of Indiana was organized out of the Northwest Territory in 1800, and embraced the area within the present boundaries of Indiana and Illinois, together with a part of Michigan. In 1809 Illinois was organized separately as a Territory. As regards the earlier period, therefore, the Indiana-Illinois region may conveniently be considered as a unit. Some of the most important early traces and trails in this region were common to both Territories, joining points within one to points within the other. One such route was the Kaskaskia-Vincennes Trace, which, however, lay entirely in Illinois, except the eastern terminus. Forming an extension of this trail, there had existed in Indiana from early times a path in the direction of Louisville via Petersburg, called the Buffalo Trace, on account of the vast herds of buffaloes passing over it on annual migrations to the bluegrass feeding-grounds and salt-licks of Kentucky. This trace crossed the Kentucky River at the "great crossings" in Scott County, the Ohio at the falls, and the Wabash at the ford just below Vincennes. For many years after 1804 it is said to have formed the usual route of travel from Vincennes to the East.¹ As Vincennes held somewhat the same relation to the Territory of Indiana that Kaskaskia did to the Territory of Illinois, it was similarly the terminus of various other early traces and roads. The early route from Detroit to the Illinois country passed by way of Fort Miami, Pottawatomie, and St. Vincent.

Fort Wayne and Tippecanoe were the centers of early operations against the Indians, and the early trails in those regions were, as a result, widened into something bearing more nearly the semblance of roads. General Harrison followed one of these routes to the site of his victory over the Indians at the former place in 1811.² Various trails from northern Illinois eastward passed through Indiana. At the junction of Fall Creek and White River several paths or trails are said to have met in consequence of a good ford which existed there—one from Vincennes, which extended on to the Falls of the Ohio³ and is now paralleled by the Jeffersonville Railroad; others extended from the upper Delaware towns on the White River and from the Pottawatomie and Miami towns on the Wabash.

As elsewhere, the early roads in many cases followed these Indian trails. When the commissioners viewed the first road between Indianapolis and Fort Wayne they found that from the White River onward the route originally chosen by the Indians could not be improved upon.² The old Centerville Road, which led from Indian-

¹Cauthorn, *A History of the City of Vincennes, Indiana, from 1702 to 1901*, p. 16.

²Cottman, "The First Thoroughfares," in *Indiana Quarterly Magazine of History*, III, 13, March 1907.

³Probably the "Buffalo Trace."

apolis to Wayne County before the building of the National Road and which was one of the earliest wagon-roads out of that place, followed the Whitewater Trail. The first settlers at Indianapolis also are said to have arrived by that trail.

Two other early traces, the Berry and Whetzel Traces, though long since obliterated, were of interest, because they were the chief avenues of immigration into the central portion of the State. The Berry Trace began at Napoleon, in Ripley County, ran thence almost west to a point on Flatrock River, about 9 miles north of the present town of Columbus, and thence north to join and follow the Indian Trail to Indianapolis. The Whetzel Trace was made in 1818 by Jacob Whetzel, one of the famous Indian fighters of that name. It constituted a way of approach from the settled Whitewater region on the east into the interior, and began in Franklin County, near the present town of Laurel, ran west to the Flatrock River, 7 miles below Rushville, thence to the Blue River at the junction of Marion and Shelby Counties, and thence west to the bluffs of White River. It was the most notable of all the early traces, and hundreds of immigrants passed over it into Shelby, Morgan, Johnson, and Marion Counties. An attempt in 1825 to obtain compensation for the cutting of this road was unsuccessful, though Whetzel had been at considerable expense of labor and hardship. By 1826 the trace was in at least partial disuse.¹

Road-building in many portions of Indiana was subject to the difficulties from soil, swamp, and forest such as existed in Ohio. The first roads constructed were merely highways with the trees cut down, leaving the stumps. No attempts were made at grading, the roads being opened along the base of hills in order to avoid grades. As a consequence, they were so located as to collect the maximum quantity of water and were often in an impassable condition. Another consequence of this method of location was that the roads were long and crooked. The roads were so bad in 1825 that when the archives of the State were removed from Corydon to Indianapolis the wagons could be drawn only about a dozen miles a day. Early travel following the frontier era was by stage coach, and the difficult character of the roads interfered greatly with travel by this method.

Early settlements were established chiefly along the streams, which were utilized for the transportation of surplus produce to market. As the country developed and settlement advanced into the interior regions, causing an increased demand for supplies, a line of wagons would be established to some point on the Ohio River. These wagons for many years afforded the only means of transportation to such points. The character of the roads was such, however, that the cost

¹Cottman, "The First Thoroughfares," in *Indiana Quarterly Magazine of History*, III, 15-16, March 1907.

of transportation by this method over any considerable distance amounted to as much as the produce was worth at market.¹ Under these circumstances the tendency toward improvement might be expected to be strong, yet it seems that little was accomplished in that direction previous to 1820, though new roads of the same indifferent character were constructed as settlement spread throughout the State. Early general laws had provided for the opening of local roads on petition. By 1820, however, the growth of settlements, the opening up of large tracts in the interior, especially the "New Purchase," comprising all the central portion of the State as far north as the upper Wabash, and the proposal to locate the capital in the central part of the State, led to extensive legislation respecting roads. In the year 1820 not less than 26 roads were projected and commissioners correspondingly appointed. Five of these roads were to lead to the proposed capital, and one—later extended to Fort Wayne—led from Lawrenceburg to Winchester.

The revenue and labor for the opening and maintenance of these roads were derived from the "three per cent fund," the then customary donation by the General Government, from a tax on real estate, commutable in labor, and from a poll labor requirement of two days in each year, with ordinary exceptions, and commutable in money. This system was perhaps only less objectionable than the character of the roads constructed in accordance with its provisions. "Most of the year a journey over the roads was simply a slow, laborious wallowing through mud" or a jolting over the "corduroy" way across the bogs. The streams were crossed "sometimes by unsafe fording and sometimes by rude ferries." "That the character of the thoroughfares impeded growth, handicapped commerce, and held in check the influences that are essential to development" can not be doubted.²

Interest in improvement of the waterways, which is considered in a later chapter, seems to have been much stronger than that in road-building. The water routes were fewer and served a larger number of people. Connecting the waterways leading to the Great Lakes with those leading to the Ohio River were several important portages or trails, which in some cases gave way successively to highways and to railroads.³

Illinois, on account of its central location, was traversed in almost every direction by Indian trails. The large rivers were avoided so far as possible and crossed when necessary at convenient and shallow fords. The hills were penetrated by their natural passes, and the routes led by the most convenient camping sites. In this region, as elsewhere, so well were these Indian paths chosen that after being utilized for years

¹Smith, *The History of the State of Indiana*, I, 344-345.

²For a description of roads in the "New Purchase" see Hall, *The New Purchase*, 46-48.

³Compare the Wabash Railway over the portage between the Maumee and the Wabash.

by the earlier settlers, they evolved into post-roads and stage-routes, many of them finally becoming permanent roads.¹

The character and location of these early trails were first developed by Americans in 1778 and 1779, during Clark's expedition into the Illinois region against Kaskaskia and Vincennes. Clark started from Fort Massac, now Metropolis, Massac County, Illinois, a point "near the Ohio terminus of several old buffalo routes across Illinois roads which became connecting links between Kaskaskia . . . and the mission at Fort Massac."² These early traces from the Ohio to Kaskaskia furnished a short cut by land, saving thrice the distance by water and obviating the ascent of the swift waters of the Mississippi. The high ground between Kaskaskia and Shawneetown on the Ohio River was crossed by one of the most important of these early traces, the Kaskaskia Trace, with its branches.

Three routes extended from Fort Massac toward Kaskaskia: (1) The first, called the Moccasin Gap route, circling to the eastward to round the lakes and swamps of Massac County, passed into Pope County and there joined the Kaskaskia Trace; this route had been made very early by the French. (2) The second route avoided the lake and swamp regions by passing to the westward of them, thence north-northwest near Indian Point, Forman, and up the east side of the Cache through Buffalo Gap to Phelps Prairie, where it also joined the Kaskaskia Trace. (3) The third route separated from the second above Indian Point, and, leaving the prairie land to the northward, near Carbondale, passed thence westward near Carbondale, Williamson County, and crossed the Big Muddy River at Murphysboro; this route was known as the "Western Trail."³

Two early State roads were later built through Moccasin and Buffalo Gaps. The Kaskaskia Trace was itself divided into two routes from Phelps Prairie to Kaskaskia—the highland route leading north through Herrin's Prairie and thence westward to the Mississippi via sources of the Pipestone and Rattlesnake and over the Big Muddy River at Humphrey's Ford; this was dry and preferable, but longer. The other and shorter course ran northwest and crossed many of the streams which the highland route headed.⁴

Another of the important early routes in the Illinois-Indiana country was the Vincennes Trace, which extended over the watershed-prairie route from Kaskaskia to Vincennes. Clark passed over this route on his expedition against Vincennes, and it was even at that time an old

¹Parrish, *Historic Illinois*, 116.

²Hulbert, *Historic Highways*, VIII, 15-16.

³*Ibid.*, 20-25. Clark followed the second of these three routes. This trail was later much used by early white emigrants from Ohio and was a long, regular line of communication between Golconda and the settlements in the American Bottom. It was straightened in part in 1821. Parrish, *Historic Illinois*, 123.

⁴Hurlbert, *Historic Highways*, VIII, 28-29. It is thought that Clark chose the latter route.

and well-known route—"marked out by the buffalo and followed by missionaries—the Appian Way of Illinois."¹ After the growth of St. Louis to a position of importance, the main route from Vincennes was no longer to Kaskaskia, but over the St. Louis Trace, which passed through the present Illinois counties of Lawrence, Richland, Clay, Marion, Clinton, and St. Clair to St. Louis.² In consequence, later travelers from Vincennes to Kaskaskia followed the St. Louis Trace as far westward as Marion County, and then turned due southwest to Kaskaskia.

The earlier Kaskaskia Trace to Vincennes ran about 75 miles in a northeast direction over the watershed along the highland prairies, through Randolph and Washington Counties and cutting the corners of Perry, Jefferson, and Marion Counties; thence the route divided into two courses and passed eastward about 100 miles to the Wabash. One of these courses passed through the center of Clay, Richland, and Lawrence Counties, crossing the Little Wabash and Big Muddy Rivers a short distance above their junction, the Embarras River near Lawrence, and the Wabash at Vincennes. The other branch passed through the northern portion of Wayne, Edwards, and Wabash Counties, crossing the Little Wabash and Fox about 2 miles above their junction, the Bonpas River near Bonpas, and the Wabash 2 miles above St. Francisville. Thence the route followed the eastern bank of the Wabash about 9 miles to Vincennes. The former branch was later probably identical with the eastern half of the St. Louis Trace.³ The primitive and difficult character of these early roads is proved by the privations undergone by Clark and his men on their famous campaign.

In northern Illinois the early trails converged upon the Iroquois River at the crossing now called Iroquois, but formerly known as Bunkun. One trail ran west and south from this point, following the river to Spring Creek and thence up the creek and westward to the present site of Paxton. Another trail ran north and east, following the sand-ridges west of Beaver Lake in Indiana, crossed the Kankakee west of the State line, and ran thence northward to Lake Michigan. Another trail led north and west along the Iroquois River to the Kankakee, thence along that stream through Bourbonnais Grove to Rock Village, thence to Hickory Creek in Will County, and finally to the Des Plaines River and on to Chicago. Another trail branched off

¹Hulbert, *Historic Highways*, VIII, 32; Parrish, *Historic Illinois*, 123-124.

²This route was practically identical with that of the Mississippi and Ohio, now the Baltimore and Ohio Southwestern Railway. Hulbert, *Historic Highways*, VIII, 37. For perils of travel on this route see Faux, *Memorable Days in America*, 310.

³Hulbert, *Historic Highways*, VIII, 34-40. See map on p. 21, showing Clark's route over the Kaskaskia and Vincennes Traces. For an itinerary of the road from Fort Vincennes to Kaskaskia in 1804 see pp. 66-68. The entire distance, according to this statement, was 220½ miles, and the time required to cover it was 43½ hours. A revision of the estimates by Draper (*Draper MSS.* XXV J, fol. 49) reduces the probable distance to 156 miles.

from the latter at Rock Village and passed south and west to a point near Ottawa. Finally, a trail passed almost due south through Danville and thence into southern Illinois. The most important trail of all led south and east to the Wabash River at the site of the battle of Tippecanoe.

Following is an abstract of a list of early trails and roads, many of which led from Kaskaskia:¹

(1) Old trails from Kaskaskia to Lusk's Ferry—the Shawneetown Road; known later as the Kaskaskia and Shawneetown Road. It was surveyed and platted through Randolph County in 1819. In early days there was a mail-route over this road by horseback.

(2) The old trail, in part a wagon-road, from Ferguson's Ferry to Turkey Hill Settlement.

(3) The old trail from Kaskaskia to Vincennes, never anything but a trail.

(4) The Kaskaskia and Cahokia Road, surveyed and platted in the year 1811, though doubtless an old trail before that time. This road is still kept up and is traveled at present.

(5) The State Road from Kaskaskia to Vandalia, surveyed and platted in 1824.

(6) The Kaskaskia, Belleville, and French Village Road, one of the early roads surveyed in the southern part of the State. There was a line of stages over this road in the early days, continuing down to 1843. This road is still maintained and traveled about as located.

(7) The Kaskaskia and Covington Road, surveyed in 1819 and resurveyed and platted in 1831. Only traces of this road remain, as it has been abandoned for years.

(8) The Chester and Waterloo Road, surveyed and platted in 1837; still open and traveled.

(9) The Kaskaskia and Murphysboro Road, surveyed and platted in 1820.

(10) The Kaskaskia and Belleville Road, west of Kaskaskia River. The first road was apparently an old trail from Kaskaskia to New Design, which was surveyed in 1820 and platted as a State road. This road has long been superseded by another road between these two places and is no longer traveled. Another authority asserts that Danville was the most clearly marked center for Indian meeting-places, while Peoria Lake, Rock Island, the mouth of the Chicago River, Shawneetown, and Starved Rock were other important centers.

(11) The Sauk Trail, traveled by the Sacs and Foxes from the Mississippi to Malden, Canada, and passing from the present town of Milan, near the mouth of Rock River, through the northern portion of Henry County, thence via the valley of the Green River into Bureau County, thence more northwardly into La Salle County, across the Fox River near the town of Sheridan, over the southern portion of Kendall County, over the Des Plaines at a ford just below Joliet, across Cook County about 2 miles south of its present southern limit, and thence into Indiana.

(12) The trail from the old villages of the Peorias at the mouth of the Des Moines River to the villages of the Kaskaskias at the great bend of the Illinois near the present town of Utica, *i. e.*, across Hancock, Warren, Knox, Stark, and Bureau Counties.

¹Moore, *Kaskaskia Roads and Trails*, in Illinois, State Historical Library Publications, No. 7, pp. 125-128. A map of these trails and roads is given. Since Kaskaskia was in early days the metropolis not only of Illinois but of the farther West in general, it was the terminus of many of the early trails and roads of that section of the country.

(13) The route of Governor Edwards into the Indian country during the War of 1812, starting from Camp Russell near Edwardsville in Madison County, thence north through Carlinville, Macoupin County, thence east of Springfield and west of Lincoln to near Center in Tazewell County, and thence north to the eastern bluffs of the Illinois.

(14) General Howard's route during the same war, starting also from Camp Russell, thence along the course of the Mississippi until opposite Fort Madison, Iowa, thence southwest across Hancock, Macoupin, and Fulton Counties to the Illinois River opposite Havana.

(15) The Fort Clark and Wabash Trail from Terre Haute to the north shore of Peoria Lake, used by immigrants and traders, and a well-traveled road after about 1815.

(16) Kellogg's Trail crossed Marshall, Bureau, Lee, Ogle, Stevenson, and Jo Daviess Counties, the first overland route between Peoria and Galena and laid out in 1825.

(17) Webb's Trail, dating from 1822, from Chicago to the Mississippi River and Fulton, and thence down to Rock Island.

The first mail-route established in Illinois was in 1805 from St. Louis to Vincennes, with a branch to Kaskaskia, and ran over the traces described above, via the present towns of Belleville, Carlyle, Salem, Maybury, and Lawrenceville. The second mail-route, established in 1807, ran from where Mount Carmel now stands to Shawneetown.

(18) The trail from Kaskaskia to Detroit, running northeasterly to Danville and bisecting the counties of Randolph, Washington, Marion, Effingham, Cumberland, Coles, Edgar, and Vermillion, via the sites of the present cities of Elkhorn, Salem, and Charleston. This trail was used by whites from near the beginning of the eighteenth century and was in almost constant use for years, wagons being driven and troops being marched over it.¹

A Territorial road law had been enacted in Illinois, and the governor of the State, in his message to the legislature at the opening of the session of 1820-21, recommended that the opening and repairing of roads be made a county charge. By the law then in effect the burden of opening and repairing the public highways fell exclusively upon the residents of the "precincts," while the land-holder who resided elsewhere, though equally benefited thereby, was exempt from any charge.² This provision of the law indicates the local character and primitive development of the roads in Illinois at that time. During the same session the road which had been laid out from Kaskaskia to Shawneetown by the authority of the Federal Government was declared a public highway of the State of Illinois for 20 years and subject to the general provisions of the law for the construction and repair of highways.³

As the Indian frontier was pushed farther to the west and north by the steady pressure of the white population, roads to Fort Dearborn (Chicago) and to Fort Detroit were necessitated both for military

¹For trails 10 to 18 see Parrish, *Historic Illinois*, 115-128. A map based on Blanchard's map in the latter's *History of Illinois* shows the early roads and trails. See also Beck, *Illinois and Missouri Gazetteer*, 1823, app. ii, for a list of roads, with schedule of distances from St. Louis.

²Illinois, *House Journal*, 1820-21, pp. 16-17.

³*Ibid.*, p. 148.

and for ordinary purposes, and we find the Federal Government engaged in the construction of various roads in this section, though for the most part, according to Flint's *Geography*, there were but few roads in Missouri except natural roads, even so late as 1828. These roads were, however, as distinguished from those of Ohio, passable at all times of the year.¹

The general character of the early roads of the entire central West previous to 1820 was very primitive. Several years later Flint characterized the system of making roads in Ohio as very defective. Except in summer the roads were generally heavy and bad.² Few of the roads in Indiana were "wrought" or kept in good repair. In summer and autumn the condition of the roads was tolerable, but during the winter and spring they were excessively deep and heavy. Ferries existed on all the large streams. The roads in Illinois, as in Missouri, were in many places "naturally good," but in considerable portions of the country they were deep and heavy in winter. The rivers of Illinois furnished most of the facilities for transport and communication. Some of the ferries were difficult of access during rainy periods on account of the muddiness of the approach to them.³ Land routes in the country north and west of Lake Michigan and of Illinois and Missouri were during the period under consideration confined largely to Indian trails, untrodden as yet by white men, except for hunters and trappers.

MICHIGAN TRAILS AND ROADS.

Michigan was organized as a Territory in 1805, although its present boundaries were not fixed until 1837, when the Territory was admitted as a State. The following account refers in general to the area embraced within these present boundaries.

During the period 1807-1812 there were only Indian trails leading into the interior. Of these the most important was a trail leading to the northward toward Michili-mackinack and Sault Ste. Marie, the Sault Ste. Marie being the waterway by which the Indians of the North maintained communication with those of the South. The principal travel of both Indians and whites by water was via the lakes, rivers, and straits, with their portages. One much-traveled route was that from the Michigan Peninsula by the Detroit River and Lake Erie to the mouth of Cuyahoga River, thence up that stream as far as navigable by canoes, thence by the portages to the headwaters of the Tuscarawas, and thence via the Muskingum River to the Ohio. The portage between the headwaters of the Maumee and the sources of the Great Miami, and that between the most southerly bend of the St. Joseph and the most northerly bend of the Wabash, also supple-

¹ Beck, *Illinois and Missouri Gazetteer*, 1823, app. ii. See pages 22-25 above for list of routes in the bounds of Illinois in 1776 and about 1820.

² Flint, *Condensed History and Geography of the Western States*, II, 345.

³ *Ibid.*, 122.

mented important water-routes to and from Michigan. Within the Territory of Michigan few portages existed, travel being mostly north and south by water on either side of the peninsula. The Pottawatomie Trail, upon which in the main the great Chicago Trail was afterwards laid, led from the St. Joseph to the Detroit River.¹

The War of 1812 led to the construction of three passable roads connecting Detroit with the valley of the Ohio and thence with the East: (1) the road to Lower Sandusky (Fremont) and thence through the great Black Swamp over 15 miles of corduroy to the rapids of the Maumee; (2) the middle route, or Hull's Road, from Urbana via Findlay to the same point; (3) the route used by Wayne in 1794 and by Harrison and Clay in 1813, by Fort Recovery and Greenville to Defiance and thence down the Maumee to the Rapids. These roads were supplemented to a certain extent by water routes. On August 27, 1818, the steamer *Walk-in-the-Water* reached Detroit and steam navigation existed thereafter in Michigan, greatly facilitating transportation and communication. No progress had in fact been made in the construction of roads since the building of the ones mentioned during the War of 1812. As late as 1819 no roads had been constructed in the Territory, except the one from Maumee Rapids to Detroit, over which the armies had moved, and a road running northeasterly up the Detroit River and along St. Clair Lake and River, probably as far as the present site of St. Clair.

KENTUCKY AND TENNESSEE TRAILS AND ROADS.

Some of the early roads of Kentucky and Tennessee have been mentioned in connection with the Wilderness Road. Others of the important early roads, especially in Tennessee, were military roads built by the Government.

As in other parts of the country, there were many Indian trails in this region, some of which were later improved into permanent ways. The "Great Natchez Trace" led from Nashville to Natchez, "the great trading emporium of the Southwest," through the heart of the Chickasaw country. The Cherokee Trace was in early days the only semblance of a road leading to Chickasaw Bluffs from the interior. This trail ran from the bluffs to Chickasaw Old Fields in North Mississippi, where it connected with the Great Natchez Trace.²

Only tortuous paths or blazed traces led over the Appalachians, and the roads between the settlements themselves were neglected. One early route used by incoming settlers was the "Good Spur Route" through western Virginia and down the Holston Valley. About 1776 the road from Wolf's Hill and the road by Fort Prince George became crowded with immigrants. Somewhat later, about 1778, commissioners were appointed to lay off a road from Jonesboro in Washington

¹Utley, *Michigan as a Province, Territory, and State*, II, 162 et seq.

²Phelan, *History of Tennessee*, 171, 179, 276, 316.

County to Burke County (North Carolina), for vehicles. This was the first wagon-road in Tennessee, and though much used by immigrants it was not always passable for wagons. In 1783 a road previously laid out from Mansker's Station to Nashville, was ordered cleared of an undergrowth of cane which had been permitted to grow up. This movement for improvement was inspired by the attention that the western settlements began to receive about this time from the State of North Carolina.¹

The legislature of North Carolina during the session of 1787 authorized the enrolling of 300 men to open a military road from Campbell's Station at the lower end of Clinch Mountain to Nashville. This was partly accomplished the following year, to the great accommodation of incoming settlers.² It was cut a minimum width of 10 feet and made passable for wagons and carts. On account of the large use made of the route by immigrants, the road was widened and another road leading into it from Bledsoe's Lick was cut in 1788. The following year provisions were made for further improvement of these roads and for exploring a route through the wilderness between the Cumberland settlement and the Holston counties.

Notwithstanding these efforts for improvement, it is little exaggeration to say that there were, prior to 1790, "no roads worthy of the name."³

A law of 1794 authorized the raising of money by a lottery for the cutting of a wagon-road from Southwest Point on the Clinch River to the Cumberland settlement.⁴ This was known as the "Old Walton Road" and ran through the Indian reservation called the "Wilderness" to the Cumberland River at the mouth of Caney Fork, the present site of Carthage. In order to encourage the opening and maintenance of this road, the legislature in 1801 required the governor to incorporate an association of citizens as the Cumberland Turnpike Company, though it does not appear that the plan of making it a turnpike road was carried out at this time.⁵ In 1804 an act was passed empowering the county courts to order the laying off of public roads, to establish ferries, and to fix the points where bridges should be built. Efforts were also made, and not without avail, to interest Congress in the construction and maintenance of roads in Tennessee. In 1811 resolutions were addressed to the Tennessee delegation in that body, directing them to obtain among other proposed improvements the establishment of "a road from East and one from West Tennessee to Mobile, to be

¹*History of Tennessee* (The Goodspeed Publishing Company, 1886), 142-143, 336.

²Phelan, *History of Tennessee*, 173, 179, 276, 316. This was the wagon-road described by Morse, *American Geography* (1789), p. 421. See Carpenter, *History of Tennessee*, 186.

³Phelan, *History of Tennessee*, 172.

⁴*Ibid.*, 279. As late as 1797 Bishop Asbury said "My horse hath the honor of swimming Holston River every time I visit the country."

⁵Garrett and Goodpasture, *History of Tennessee*, 255. This is said to have been the first charter of incorporation for individual profit granted by the State of Tennessee.

kept up by turnpikes and ferries at proper points," and to secure the repairing of the Natchez Trace.¹

On March 1, 1819, Nicholas Byers and David Russell, agents in behalf of the States of Tennessee and Georgia, and the chiefs and councillors of the Cherokee Indians in full council assembled, entered into a convention by which full power and authority was granted to the said agents to establish a turnpike company, to consist of themselves, together with other enumerated white persons, and five proper and fit persons of the Cherokees. This company when thus organized was authorized to lay out and open a road from the most suitable point on the Tennessee River, to be directed the nearest and best way to the highest point of navigation on the Tugaloo River. When opened and established the road was to remain a free and public highway, to the interest and benefit of said company and their successors, for 20 years, and was then to revert to the Cherokee Nation. The turnpike company agreed to pay the sum of \$160 yearly to the Cherokee Nation for the aforesaid privilege, payment to begin when the road was opened and in complete operation.² It does not appear, however, that this road was ever opened. Apparently not much was accomplished previous to 1820 toward the construction of good roads in Tennessee either by the State, or by the individual counties, or by the Federal Government.

Imlay, writing in 1797, gives the routes shown in table 3 from Tennessee points to other points within and without the State.³

TABLE 3.

	Miles.		Miles.
(1) Knoxville to Philadelphia ⁴	650	(3) From Knoxville to Nashville ⁶ as follows:	
(2) From Knoxville to Long Island, on Holston (River).....	100	From Knoxville to Southwest Point.	35
Abington.....	43	Big Lick garrison, on Cumberland..	⁶ 80
Fort Chissel.....	64	Bledsoe Lick.....	32
English's Ferry, New River.....	24	Nashville.....	36
Montgomery Town.....	11	Total.....	183
Big Lick.....	33		
Liberty Town.....	28	(4) Nashville to Lexington, Kentucky, as follows:	
New London.....	15	From Nashville to Three Forks of	
Floods.....	34	Red River.....	28
Powhatan Court House.....	65	Big Barren River.....	32
Richmond.....	32	Green River.....	45
From Knoxville to Richmond ⁴ ⁵	494	Danville.....	50
		Lexington.....	35
		Total.....	190

¹Phelan, *History of Tennessee*, 276-277. The Natchez Trace was the site of the military road provided for by act of April 21, 1806, but which had apparently not been completed.

²*American State Papers, Indian Affairs*, II, 189.

³Imlay, *A Topographical Description of the Western Territory of North America* (3d ed.), 515-516.

⁴Imlay calls these two roads "very good waggon roads" and states that the price of transportation of any goods or articles from Richmond to Knoxville did not exceed \$4 per hundred-weight. The road to Philadelphia is evidently that along the Great Valley.

⁵The figures are given as printed in Imlay, although the figures in the total seem to be transposed.

⁶The 80 miles between Southwest Point and Big Lick garrison were "not yet opened for waggons."

According to Imlay, roads were first opened in Kentucky for carriages in 1783, 1784, and 1785. Previously the roads were passable only for single horses. The part played by the buffalo in the making of these early paths is pointed out by noting the "prodigious roads they have made from all quarters as if leading to some populous city."¹ The Wilderness Road had by 1797 acquired a more definite location entirely across the State to the Falls of the Ohio, and Imlay submits the following stages in that route, with its eastern continuation, calling it the "road from Philadelphia to the Falls of the Ohio, by land:"²

TABLE 4.

	M.	M. D.		M.	M. D.
From Philadelphia to Lancaster...	66		To Washington court-house.....	45	498
To Wrights' on Susquehanna.....	10	76	the block-house.....	35	533
Yorktown.....	12	88	Powel's mountain.....	33	566
Abbott's-town.....	15	103	Walden's ridge.....	3	569
Hunter's-town.....	10	113	the Valley station.....	4	573
the mountain at Black's gap... 3	116		Martin Cabbin's.....	25	598
the other side of the mountain. 7	123		Cumberland mountain.....	20	618
the Stone-house tavern.....	25	148	the ford of Cumberland river.. 13	631	
Wadkin's ferry on Potowmac.. 14	162		the Flatlick.....	9	640
Martinsburg.....	13	175	Stinking creek.....	2	642
Winchester.....	20	195	Richland creek.....	7	649
Newtown.....	8	203	Down Richland creek.....	8	657
Stover's-town.....	10	213	Raccoon spring.....	6	663
Woodstock.....	12	225	Laurel river.....	2	665
Shanandoah river.....	15	240	Hazel patch.....	15	680
the north branch of Shanandoah 29	269		the ford on Rock Castle river.. 10	690	
Stanton.....	15	284	English's station.....	25	715
the north fork of James river.. 37	321		Col. Edward's at Crab orchard. 3	718	
James river.....	18	339	Whitley's station.....	5	723
Botetourt court-house.....	12	351	Logan's station.....	5	728
Wood's on Catauba river.....	21	372	Clark's station.....	7	735
Paterson's on Roanoak.....	9	381	Crow's station.....	4	739
the Alleghany mountain.....	8	389	Harrod's station.....	3	742
New river.....	12	401	Harland's.....	4	746
the forks of the road.....	16	417	Harbison's.....	10	756
Fort Chissel.....	12	429	Bard's-town.....	25	781
a stone mill.....	11	440	the salt-works.....	25	806
Boyd's.....	8	448	the falls of the Ohio.....	20	826
Head of Holston.....	5	453			

Considerable agitation arose in Kentucky about 1818 over the method of reaching the navigable waters of the Ohio from the interior parts of the State. As between the towns of Louisville and Lexington the dispute took the form of the relative advisability of building turnpike roads, favored by Louisville, and of improving the Kentucky River, favored by Lexington. The result was that both enterprises were undertaken, the Maysville and Lexington Turnpike being constructed about 1820.

¹Imlay, *A Topographical Description of the Western Territory of North America*, 323.

²*Ibid.*, 376-378. A combination of the road along the Great Valley and the Wilderness Road. Compare with the route of the Wilderness Road.

EARLY MILITARY ROADS AND OTHER ROADS CONSTRUCTED BY THE FEDERAL GOVERNMENT.

Several instances of roads hastily and crudely constructed during military campaigns have been already cited. Other roads were constructed by the military authorities under direction of the Federal Government in times of peace for general military purposes, but in some cases roads constructed under the direction of the Department of War were intended primarily to provide better access to the public lands or to facilitate communication with newly made settlements. A number of these roads were constructed under treaties signed between the United States and the various Indian tribes.

Consent was obtained October 24, 1801, from the Chickasaws, and December 17, 1801, from the Choctaws, to open a wagon-road through their respective lands. By act of Congress, April 21, 1806, \$6,000 was appropriated for that object, and the construction of the road from Nashville to Natchez was effected under the direction of the President of the United States. By treaty with the Creek Indians, November 14, 1805, the United States acquired a right to a horse-path through their lands, and \$6,000 was appropriated (by the same act that made the appropriations for the roads through the lands of the Chickasaws and Choctaws) for the purpose of opening a road from the frontier of Georgia, on the route from Athens to New Orleans, as far as the thirty-first parallel of latitude. This road was built.¹ The act made no provision for bridges or causeways. A committee in the House of Representatives, reporting (February 19, 1815) upon the expediency of repairing and keeping in repair these roads from Nashville to Natchez and from Fort Hawkins, Georgia, to St. Stephens, Mississippi Territory, pointed out the advantages which would result from such a policy, noted the special military advantages to be derived at that time from such an undertaking, and prepared a bill for the purpose of improving the road from Nashville to Natchez.²

The opening of a road from Vincennes, Indiana, towards Dayton, Ohio, was also contemplated by Congress in this act, passed April 21, 1806, but the moneys appropriated for that and similar purposes were found insufficient to accomplish the desired object. The act making appropriations for the support of the Government during 1809 appropriated \$1,800.48 additional for defraying the expense of opening the road or roads provided for in the act of April 21, 1806, from the Mississippi to the Ohio and to the Indian boundary-line established by the treaty of Greenville, inasmuch as the balance of the former

¹See United States, *Laws*, 1789-1815, IV, chap. 41, p. 58. By act of Feb. 17, 1809, and by act of June 28, 1809, additional appropriations were made for the construction of this road, the total appropriations amounting to \$13,800, though not all so applied.

²*American State Papers, Miscellaneous*, II, 273. It does not appear that this bill was passed by Congress. See *Niles' Register*, I, 376, Jan. 18, 1812, to the effect that the road from Fort Hawkins to Fort Stoddart through the Indian territory had been completed and that the troops which had been engaged in its construction were returning to their respective stations.

appropriation had been carried to the surplus fund.¹ How much of this was applied to the road east of Vincennes does not appear. A committee in the House of Representatives, reporting, January 17, 1811, upon the expediency of opening such a road, pointed out that its construction would expedite the sale of the public lands, besides affording other advantages. It was regarded as the most direct possible course from Pittsburgh to Vincennes and St. Louis and was expected to become the chief post-route to the Territories northwest of the rivers Ohio and Mississippi from Washington by way of the seat of government of the State of Ohio. The committee submitted the following resolution:

“*Resolved*, That it is expedient to be caused to be opened a road from Vincennes, or from some point on the road leading from Vincennes to the falls of the Ohio, to the eastern boundary of Indiana Territory in a proper direction towards Dayton, in the State of Ohio.”²

By act of Congress approved March 3, 1807, the President of the United States was authorized to cause to be opened a road from the thirty-first degree of north latitude to New Orleans on the route from Athens to New Orleans, under such regulations as might be agreed upon with the Spanish Government. It does not appear that this was ever done.³

By the treaty of Brownstone,⁴ concluded with the Indians November 25, 1808, provision was made for the building of a road to give better access to the Indian wards of the Government, by which the Indians themselves, without remuneration, ceded the lands for the road, 120 feet wide, from the foot of the rapids of Miami-of-the-Lakes to the western limit of the Connecticut Western Reserve, and all land within 1 mile of the said tract on each side of it; and also another tract, 120 feet wide, from Lower Sandusky southerly to the boundary-line established by the treaty of Greenville.⁵ No measures were adopted to carry out the plan until by act of Congress, December 12, 1811, the President of the United States was authorized to appoint three commissioners to explore, survey, and mark the most eligible course for the proposed road, \$6,000 being appropriated to defray the

¹United States, *Laws*, 1789-1815, IV, chap. 189, p. 207.

²*American State Papers, Miscellaneous*, II, 145; see United States, *Laws*, 1789-1815, IV, chap. 41, p. 58.

³United States, *Laws*, 1789-1815, IV, chap. 98, p. 117.

⁴*American State Papers, Indian Affairs*, I, 757.

⁵A committee reporting in the House of Representatives, Jan. 7, 1811, in respect to the carrying out of this part of the treaty of Brownstone, pointed out the need of such roads from the Territory of Michigan to the adjacent settlements in the State of Ohio, for general communication, for facilitating the mails, and for military purposes. The aggregate length of the road was estimated at 120 miles, and the estimated expense of opening was \$4,000. It was pointed out that delay must ensue unless the road be built by the General Government. The Territory of Michigan was destitute of the necessary means, while the road also lay outside of her jurisdiction. Ohio was fully occupied with her own roads within. The committee submitted a resolution to the effect that provision ought to be made by Congress for carrying out the provisions of the treaty so far as it related to the roads mentioned. See *American State Papers, Miscellaneous*, II, 128.

expenses of executing the law. Nothing, however, was accomplished, on account of the immediate ensuance of war. The northwestern territory having been lost to the British, and the northwestern army under General Harrison being under the necessity of constructing a road in order to reach the enemy, practically the entire appropriation was spent for this purpose. The road constructed by the army, however, proved to be of no permanent commercial value, and by 1820 it was said that not a solitary traveler found his way along that avenue. The road having been found to be of no practical utility, the President was authorized by act of Congress, April 16, 1816, to alter its location. By the treaty of the Rapids of the Miami, September 1817, the whole territory along both routes became, with other portions, the property of the United States. A committee which reported in the House of Representatives May 12, 1820, in reference to the roads contemplated by the original treaty, expressed the opinion that notwithstanding the cession of the lands by the Indians, the obligation and the necessity for the construction of the roads remained.

It was pointed out that the land could not be settled before a road was built, and this road the State of Ohio could not be expected to build, not being vitally interested in it. The military necessity for the road was also pointed out, and it was recommended that a part of the adjacent land be set apart for the purpose of defraying the expense of making the road.¹ The general route of this proposed road was from Michigan over the Black Swamp to the Western Reserve.

On June 28, 1809, an additional appropriation of \$3,000 was made for defraying the expense of opening a road from Nashville, Tennessee, to Natchez, in Mississippi Territory. Of the total amount of \$9,000 appropriated for this purpose, \$3,000 had been applied by the close of 1817. The appropriations for opening this road, as well as that for opening the road from the frontiers of Georgia to New Orleans, were paid to the Postmaster General and disbursed by him, since those roads were intended primarily for the transportation of mail through the wilderness. Both of these roads were, by the close of 1817, completed, as far as the object for which they were intended required.²

The sum of \$800 was appropriated on January 8, 1812, for opening roads from the line established by the treaty of Greenville to the North Bend in the State of Ohio, but no part of this sum had been applied by December 9, 1817. On April 27, 1816, the sum of \$8,000 was appropriated for opening roads in Illinois Territory, of which \$1,208.51 had been so applied by the close of 1817.³ The road from Shawneetown to Kaskaskia was embraced under this act, but at the latter date the

¹*American State Papers, Miscellaneous*, II, 593.

²*Ibid.*, II, 466; see also United States, *Laws*, 1798-1815, IV, chap. 189, p. 207. The balance of the original appropriation had been carried to the surplus fund.

³*American State Papers, Miscellaneous*, II, 468.

work accomplished had been confined to the exploration of the route and the transmission of a report, accompanied by a map, for the sanction of the President, by the commissioners employed in the execution of that service.¹

In March 1816, the general commanding the Southern Division was ordered to employ the troops in cutting a military road from the most convenient point upon the Tennessee River to New Orleans. This road, as finally located, began at Madisonville, Louisiana, and terminated in Tennessee, 21 miles north of the Tennessee River, which was crossed at or near the Muscle Shoals. The road was begun in June 1817, and completed in January 1820. It extended a distance of 392 miles, and was constructed throughout its entire length by the army. On April 27, 1816, an appropriation of \$10,000 was made for repairing and keeping in repair this road, together with the road from Fort Hawkins, Georgia, to Fort Stoddart. By the close of 1817 the whole appropriation had been applied.²

On May 15, 1816, commissioners previously appointed to survey a road from Reynoldsburg on the Tennessee River, through the Chickasaw Nation, there to intersect the Natchez Road, brought in a report. The proposed road was to intersect the Natchez Road near the south end of Chickasaw Old Town, 129 miles from Reynoldsburg. The proposed route was said to be uninhabited at that time, except 24 miles at the south end. It was estimated that \$2,600 would be sufficient to make a good road, and it was believed that promptness would be gained by leaving the construction of the road to the General Government, since the legislature of Tennessee would not meet for 16 months and even then an appropriation from that source would be doubtful.³ An appropriation of \$4,000 was made for this purpose, March 3, 1817. By the close of the same year the entire amount had been applied to the purpose intended and the work was believed to be in a state of "considerable forwardness."⁴

Orders were given in May 1816, to the commandant of the Fifth Military Department, to employ the troops under his command in the construction of a military road from Detroit to Fort Meigs, at the foot of the rapids of Miami-of-the-Lakes. This road was nearly completed by the close of 1817. Within the same month a survey was ordered, extending this road from Fort Meigs to the Connecticut Reserve in the State of Ohio, and another road was intended to be opened at the same time from the reservation at the rapids on the Sandusky to the settled parts of Ohio south of that point.⁴

During the autumn of 1817 the troops at Plattsburg, New York, were ordered to repair and complete the military road between that

¹*American State Papers, Miscellaneous*, II, 466-467.

²*Ibid.*, II, 468.

³*Ibid.*, II, 402.

⁴*Ibid.*, II, 469. Apparently the roads contemplated by the treaty of Brownstone.

station and the station at Sackett's Harbor through "Chatauque County."¹ This road was begun from Plattsburg with the intention of extending it to French Mills on the Salmon River; and the road from Sackett's Harbor was commenced with the intention of extending it to Morristown on the St. Lawrence. It was foreseen that the natural growth of the country between French Mills and Morristown would soon complete the route between those points without external aid.² The entire length of the road was 180 miles. Construction was begun by order of the President of the United States in August 1817, and suspended in 1821.³ By the beginning of 1823, about 20 miles of the road between Plattsburg and French Mills was completed; the remainder was opened, but required to be cleared of stumps and stones and to be formed so as to carry off water. Between Sackett's Harbor and Morristown 20 miles was completed, while the remainder was in the same condition of progress as the unfinished portion between Plattsburg and Sackett's Harbor. It was estimated that the entire road would be completed within two seasons.² Under act of March 3, 1823, construction of the road was resumed and continued till October 1824, when it was discontinued for want of an appropriation. The road remained unfinished as late as 1830, although 64 miles of the whole distance had by that time been constructed by the army of the United States.³

In answer to a resolution of the House of Representatives, December 9, 1817, requesting information as to what roads had been made or were in progress under the authority of the Executive of the United States; the States and Territories through which they passed or were intended to pass; the periods when they were ordered to be made, and how far they had been executed, the Secretary of the Treasury submitted the information contained in table 5 on page 36.⁴

¹*American State Papers, Miscellaneous*, II, 470. The spelling here and the facts are as in the original report by Gallatin, and a map of the period shows the old military road in northern New York, but offers no clue to the confusion of names, unless "Chatauque" be a mistake for Chateaugay. But there was no county by that name at any time.

²*Report of Secretary of War (Calhoun)*, Jan. 21, 1823, in *American State Papers, Miscellaneous*, II, 987-988.

³*American State Papers, Military Affairs*, IV, 626.

⁴*American State Papers, Miscellaneous*, II, 468. A discussion of the facts assembled in this table accompanies and the above references apply in part to the table and in part to the discussion. A report from the Secretary of War giving information relative to roads constructed by the army constitutes a part of the general report transmitted by the President, and the references appertain to that report in part. Neither report appears to be complete. In compliance with a resolution of the House of Representatives, Dec. 15, 1830, the Secretary of War transmitted a report of the Quartermaster-General, dated Jan. 7, 1830 (*Ex. Doc. No. 48*, 21st Cong., 2d sess., II, 1830-31), giving a statement of the several roads which have been constructed by the army of the United States, showing their location and extent, the period of their construction, the authority by which they were constructed, and their cost, so far as could be ascertained. To that part of the report relating to the period previous to 1820 reference has been made above. This report is admittedly deficient.

A road 48 miles in length, commencing at the Bayou St. Louis in the State of Mississippi and intersecting the military road leading from Madisonville, Louisiana, to Tennessee, was begun by the troops in 1818 and finished in 1819.

TABLE 5.—*Appropriations made by law in relation to roads.*

Date of acts.	Designation of roads.	Amount appropriated.	Amount applied.	Amount not applied carried to surplus fund.	Balance remaining to be applied.
1806, Apr. 21	{ Opening a road from the frontier of Georgia to New Orleans. ¹	\$13,800.00	\$5,500.00	\$8,300.00	.....
1809, Feb. 17					
June 28	{ Opening roads through the territory lately ceded by the Indians to the United States from the Mississippi to the Ohio and to the former Indian boundary-line, which was established by the treaty of Greenville. ¹	7,800.48	5,539.35	2,261.13	.....
June 28					
June 28	{ Opening a road from Nashville in the State of Tennessee, to Natchez in the Mississippi Territory. ¹	9,000.00	3,000.00	6,000.00	.....
1811, Dec. 12	Surveying and making roads within the State of Ohio, as contemplated by the treaty of Brownstone. ¹	6,000.00	5,945.50	54.50	.....
1812, Jan. 8	Roads from the line established by the treaty of Greenville to the North Bend in the State of Ohio. ¹	800.00		800.00	.....
1816, Apr. 27	Roads in Illinois Territory ¹ .	8,000.00	1,208.51	.....	\$6,791.49
Apr. 27	Roads between Columbia, ² Tennessee, and Madisonville, Louisiana, and Fort Hawkins, Georgia, and Fort Stoddert.	10,000.00	10,000.00	.....	.....
1817, Mar. 3	Opening a road from Reynoldsburg on the Tennessee River, in the State of Tennessee, through the Chickasaw Nation, to intersect the Natchez Road near the south end of Chickasaw Oldtown.	4,000.00	4,000.00	.....	.....
		.....	35,193.36	.....	.....

¹Under direction of President of United States.²Under direction of Secretary of War.

A road from Council Bluffs on the Missouri River to Grand River in the State of Missouri, a distance of 300 miles, was constructed by the troops in the year 1820.¹

It was proposed to use the three regiments comprising the Missouri and Mississippi expeditions in 1819, among other purposes, for remov-

¹*American State Papers, Military Affairs*, IV, 626.

ing some of the chief obstructions to the navigation of the Missouri River, such as planters' and sawyers' rafts; to open a road from Charlton in Missouri Territory to Council Bluffs and thence to the Mandan villages; to open a road from Council Bluffs to the post (Fort Snelling) at the mouth of the St. Peter River (now Minnesota) on the Mississippi; to improve the navigation of the Wisconsin and Fox Rivers and connect them by a canal, or good road, in order to facilitate the communication between Fort Howard at Green Bay and Prairie du Chien on the Mississippi River.¹ Only a small portion of this work was accomplished by 1820.

A memorial was presented to Congress by the State of Louisiana, December 13, 1820, favoring the construction of a military road from Fort St. Phillip to the English Turn in Louisiana. On January 9, 1824, the Secretary of War communicated a report, but apparently the matter was dropped.

BRIDGES AND FERRIES.

The establishment of ferries throughout the country was contemporaneous with the opening up of roads or paths of any character, wherever these encountered streams that could not be forded or immediately bridged. Bridges generally came somewhat later. Both were often built and owned by private parties, under a grant of some sort from the Colony; in other cases the bridge or ferry was built and operated by a town or county. A ferry at Beverly, authorized as early as 1636, was operated by the town of Salem, Massachusetts. In this case, under a lease from the Court of Assistants, the lessee was subject to regulation not only as to means of transportation, but also as to rates charged for service. No bridge was built at the point until 1787, when Beverly, on the ground that the ferry was managed in the interest of Salem, started a movement for a bridge. Although much opposition developed, a charter was finally secured, and a bridge constructed and opened for use on September 24, 1788,² which was considered "one of the modern wonders." At the expiration of the charter, 70 years later, the bridge reverted to the State.³

Before 1657 a ferry over the Chebacco River at Ipswich had been established, which, about the year 1700, was replaced by a bridge. Other bridges, also, were built at Ipswich during its early history. One for foot passengers, built as early as 1635, renewed and widened in 1641, and repaired in 1663 and again in 1700, was at the latter date called the "Great Bridge." In 1815, \$1,500 was voted to rebuild the "Great Bridge" at Chebacco, and repair its causeway,

¹*American State Papers, Military Affairs*, II, 32.

²This bridge had 93 piers, was 32 feet wide, 1,484 feet long, and was all of wood. It was called the "Essex Bridge," and cost about \$16,000. See Felt, *Annals of Salem*, I, 304-311; see pp. 299-303 for ferries at Salem.

³Rantoul, *Some Notes on Old Modes of Travel*, in Essex Institute, *Historical Collections*, XI, 35.

etc., and \$1,000 more was voted to finish it.¹ In 1666 there was a horse bridge over Chebacco River by Gloucester. This was broken down by a storm in 1672 and then repaired. More than half a century later, in 1730, a cart bridge was built across the river, and in 1764 it was voted to rebuild the town and county bridge 6 or 8 feet wider. This was done at a cost of £1,000, £500 being provided by the town and an equal amount by the county. The bridge was strong and neat, having two arches, with one solid pier in the bed of the river. In 1770 there was a bridge built of stone at Muddy River. Marblehead Ferry is first mentioned in 1637. There were ferries in 1639 from Chelsea and Charlestown. A cart bridge was built by Boston and Roxbury in 1633. In 1634 a horse bridge was built at Neponset and others were built soon after. After King Philip's War cart bridges multiplied.

The first record of a ferry in Delaware is of that over the Delaware at "Christeen Kill," October 1, 1669.² The Brandywine Ferry at Newcastle is mentioned as early as May 1675. A ferry-boat was to be kept, and for the passage of a man and horse 2 gilders were to be paid, while a man alone was charged 10 styvers. A bridge was built in 1765. There was a ferry over Indian River in Sussex County as early as 1796. The Newcastle and Salem ferry across the Delaware is first mentioned July 25, 1724, and is said to have been the first ferry across that river. This was an important improvement to the people of New Jersey, who in early times voted and worshiped at Newcastle and were also under the jurisdiction of the Newcastle court. A ferry was also established by act of the legislature at this place in 1801. There was also a ferry at Newcastle over Christiana Creek at an early date. A ferry was established at Newport prior to 1790, and another provided in 1800, which was abandoned upon incorporation of a bridge in February 1813. On October 26, 1790, the court was petitioned to make the ferries over the Christiana at Newport and Wilmington free. In March 1808, a drawbridge was opened over Christiana Creek at Wilmington and the ferry property was sold. A ferry known as Cannon's Ferry was authorized over Nanticoke River in Sussex County, February 2, 1793. A ferry established at Seaford in 1807 was superseded by a drawbridge in 1832.³

According to Earle:

"The early bridges of provincial days were but insecure makeshifts in many cases, miserable floating bridges being common across the wide rivers. In England the bridges were poor also. We were to be early in the fine bridge building and to excel in it, as we have to this day."⁴

¹Felt, *History of Ipswich, Essex, and Hamilton*, 53.

²Scharf, *History of Delaware*, I, 419.

³*Ibid.*, I, 418-421.

⁴Earle, *Stage Coach and Tavern Days*, 228.

An early instance of bridge-building considered fine in its day was that of a bridge over the Charles River, connecting Charlestown with Boston, which was successfully planned and built in 1786, by Lemuel Cox, a Medford shipwright. This was the longest bridge in the world and was regarded as a great feat of engineering. There had been no bridge whatever between Boston and Charlestown over the Charles. Cox afterward built the Malden Bridge and the Essex Bridge,¹ but the bridge between Boston and Charlestown was in 1789 considered the principal bridge in Massachusetts, or "in any of the United States." The following description of the bridge is given:²

	<i>Feet.</i>
The abutment at Charlestown, from the old landing is.....	100
Space to the first pier.....	16.5
36 piers at an equal distance, to draw.....	522.5
Width of draw.....	30
39 piers at equal distance.....	672
<hr/>	
75 the whole number of piers.	
Spaces to the abutment at Boston.....	16.5
Abutment at Boston to the old landing.....	45.5
<hr/>	
Whole length.....	1,503

"Each pier is composed of seven sticks of oak timber, united by a cap piece, strong braces and girts, and afterwards driven into the bed of the river, and firmly secured by a single pile on each side, driven obliquely to a solid bottom. The piers are connected to each other by large string pieces, which are covered with four inch plank. The bridge is 43 feet in width and on each side is accommodated with a passage six feet wide, railed in for the safety of people on foot. The bridge has a gradual rise from each end, so as to be two feet higher in the middle than at the extremities. Forty elegant lamps are erected at a suitable distance from each other, to illuminate it when necessary. There are four strong wharves, connected with three piers each, sunk in various parts of the river. The draw is constructed on the most approved plan; the machinery is very simple; and it is designed to require the strength of two men only in raising it. The floor on the bridge at the highest tides is four feet above the water, which generally rises about twelve or fourteen feet. This bridge was completed in thirteen months. . . ."³

Of the three rivers crossed in traveling by the common road from Philadelphia to New York, the "Hakkensack," the "Posiac," and the Raritan, Morse mentions ferries over the first two, but only a ford over the Raritan.⁴ There were in 1789 three floating bridges thrown across the Schuylkill River in Pennsylvania, made of logs fastened together and lying upon the water.⁵

¹Earle, *Stage Coach and Tavern Days*, 229. In 1770 Cox went to Ireland and built a bridge 900 feet long over the Foyle at Londonderry, which feat the English engineer, Milne, had declared impossible. It was constructed of American oak and pine and built by Maine lumbermen and carpenters.

²The figures are given as printed in Morse, *American Geography* (1789), pp. 180, 181, though apparently not quite accurate.

³La Rochefoucauld, *Travels through the United States*, I, 401, states that this bridge with the causeway was a mile in length. The length of the shortest bridge connecting Boston with the mainland at that time (1795-97) was one-third of a mile.

⁴Morse, *American Geography* (1789), p. 282.

⁵*Ibid.*, 304.

Over the great falls of the Connecticut River between Walpole and Westminster, where the river was scarcely 30 feet across, a bridge 160 feet in length was built in 1784.¹ This was the first bridge ever erected over that river.²

Morse describes the ferry at the crossing of the Lehigh River at Bethlehem, where a flatboat large enough to carry a team of 6 horses ran on a strong rope, fixed and stretched across the river, the boat being propelled backwards and forwards across the stream by the force of the current alone. This was accomplished by attaching the flat always in an oblique position, so as to catch the propelling force of the current upon its longer side.³ At a little later period a similar ferry operated over the Muskingum River at Marietta.⁴ At the same time there was a ferry over Patapsco River in the vicinity of Baltimore, while Baltimore itself was connected with Falls Point, where the large ships came to port, by two bridges over the creek between.⁵ At Richmond a handsome and expensive bridge, 300 to 400 yards in length and constructed of boats, had been recently thrown across the James River at the foot of the falls. This bridge, built by a wealthy planter, produced for him a "handsome revenue" of tolls.⁶ Elkanah Watson, in 1791, found the bridges between Albany and Schenectady "infamous."⁷ La Rochefoucauld, in his travels during the years 1795 and 1797, found a "safe and convenient" ferry over the Steepsent River at Newcastle, though the construction of a bridge was being agitated.⁸ He found a bridge building at Portland on Casco Bay, from the direction of North Yarmouth.⁹

Over the Piscataqua between Dover and Portsmouth there was a ferry by one road and a bridge by the other, which was "beyond dispute the finest in America."¹⁰ This bridge was built in 1793 at a cost of \$65,401. It was constructed of wood in the form of an angle, the sides uniting on an island in the center. It rested upon piles, except that part near the island, which consisted of an arch 244 feet 9 inches in width, the pillars of which were supported entirely by a scaffolding of wood. The bridge, besides the balustrade on either side, was intersected and strengthened in the middle by "palisadoes." The length was 2,290 feet, and the highest point of the arch was 100 feet above the bed of the river and 50 feet above the common water-mark. The purpose of making the arch was to permit the passage of small sail-

¹Built in 1785 according to Farmer and Moore, *Gazetteer of New Hampshire*, 17.

²Morse, *American Geography* (1789), p. 142.

³*Ibid.*, 322.

⁴Palmer, *Journal of Travels*, 60. The oblique direction of the flat was secured by attaching the flat to the ferry rope by ropes of unequal lengths at either end.

⁵Morse, *American Geography* (1789), p. 353.

⁶*Ibid.*, 382.

⁷Watson, *History of Rise, Progress and Existing Conditions of the Western Canals in the State of New York*, 26.

⁸La Rochefoucauld, *Travels through the United States*, II, 452.

⁹*Ibid.*, I, 459.

¹⁰Farmer and Moore, *Gazetteer of New Hampshire*, 18.

vessels underneath.¹ Previously the bridge across the Merrimac from Portsmouth to Newbury Newton had been considered the most elegant in New England.²

Weld, a contemporaneous traveler, in the years 1795-1797, after paying his respects to the road between Baltimore and Washington, states that the bridges over creeks in the course of the road "were equally perilous, being formed of a few loose boards that totter while a carriage passes over them."³ He describes the great difficulty of getting across the Susquehanna on the road from Baltimore to Philadelphia in winter, when the river was frozen over at the ferry. At one time he was detained three hours until the ice could be broken. The next winter he met with a similar experience in getting over by the ferry on the Delaware while on his way from Philadelphia to New York. He crossed the Potomac at the "great falls" by a ferry, while there was a "ferry of six leagues" over Elizabeth River at Norfolk, Virginia. At the time of his visit he reported two bridges (really one) over the James River at Richmond. The river was 2,100 feet wide, with an island in mid-stream, to which the two bridges extended from the opposite shores. The bridge from the south shore was sustained by 15 large boats that were kept stationary by chains or anchors. The other, leading from the island to the town, was built upon piers, but it was destitute of railing, and the boards that covered it were loose. To venture over this bridge he considered "exceedingly dangerous."⁴ He found a commodious wooden bridge over the Raritan at Brunswick, New Jersey, with a draw in the part leading over the stream. There was a "footpath on either side, secured with railing and embellished with lamps."⁵

In 1796, at Augusta, Georgia, there was a bridge over the Savannah River, opposite Centre Street, built by Colonel Wade Hampton, of South Carolina. It was destroyed by a flood, however, that year.⁶ The bridges south of the Potomac were generally of unsubstantial character. The poet Moore wrote in 1800 of Virginia bridges:

"Made of a few of uneasy planks
In open ranks,
Over rivers of mud."⁷

Jefferson records in 1801 that of eight rivers between Monticello and Washington, five had neither bridges nor boats.⁸

A traveler in 1812 tells of a bridge near Fayetteville, North Carolina, which was made of three large logs stretched across the creek, upon

¹La Rochefoucauld, *Travels through the United States*, I, 467.

²*Ibid.*, II, 200.

³Weld, *Travels through the States of North America*, 48.

⁴*Ibid.*, 140.

⁵*Ibid.*, 188; see also La Rochefoucauld, *Travels through the United States*, I, 547.

⁶White, *Historical Collections of Georgia*, 594.

⁷Earle, *Stage Coach and Tavern Days*, 366, 367.

⁸Adams, *History of the United States*, I, 14.

which were laid "a number of misshapen pieces called rafters, thrown on at random, without being fixed either by nails or pins." A freshet had disturbed them, and in getting over an accident occurred in which one horse was killed. The horses plunged into the next creek and swam across, while the passengers held the mail bags up to keep them dry.¹

Thomas Twining in 1796 crossed the floating bridge across the Schuylkill on his way from Philadelphia to Baltimore. This bridge he describes as being constructed of logs of wood placed by the side of each other upon the surface of the water, with planks nailed across them. Although it floated when not "charged" or "charged but lightly," the weight of the wagon depressed it several inches below the surface. Twining adds:

"The roughness and imperfection of this construction on the principal line of road in America and not a mile from the seat of government afforded the most striking evidence I had yet seen of the little progress the country had hitherto made in the improvements of civilization. The existence of such a bridge seemed the more surprising as it completely obstructed the navigation of the river, which would otherwise, I was told, admit small craft as high up as Reading, nearly 80 miles further up."²

The Cayuga bridge, a noted one in its day, built by the Manhattan Company of New York at a cost of \$150,000,³ was begun in May 1799, and finished in September 1800. It was 1¼ miles long and could accommodate three wagons abreast.

The first suspension bridges were built in this country, and at the time of Gallatin's report in 1808 there were several of these bridges in America constructed upon the plan of James Findley, of Fayette County, Pennsylvania. The first of these was built in 1796⁴ across Jacob's Creek on the road between Uniontown and Greensborough; the largest was the one over the Merrimac near Newburyport, Massachusetts, of 244 feet span.⁵ Findley's patent was dated from 1801 and between that year and 1811 eight suspension bridges were built.⁶

Although ferries had been established at Albany, New York, from the earliest time, and were always maintained there under colonial or State authority, not until 1856 was an act passed authorizing a bridge. As in the case of other navigable streams, it was feared that a bridge would interfere with navigation.⁷

The first public ferry of Kentucky was authorized at Boonesborough by the legislature of Virginia in October 1779. Others were author-

¹Earle, *Stage Coach and Tavern Days*, 366.

²Twining, *Travels in America One Hundred Years Ago*, 60-61.

³O'Reilly, *Settlement in the West*, 173. See Maude, *Visit to the Falls of Niagara in 1800*, p. 47.

⁴Alice Morse Earle speaks of the Newburyport bridge as being the oldest suspension bridge in America, which may be granted, though not the first. The Newburyport bridge is still standing.

⁵For cut of this bridge see Earle, *Stage Coach and Tavern Days*, 230.

⁶*Monthly Chronicle of Interesting and Useful Knowledge* I, 8-11, Jan. 1839. According to this article, no suspension bridges of any consequence had been built in the United States for some time preceding its publication.

⁷Argument of Daniel D. Barnard in the Albany Bridge Case, submitted to the Supreme Court of the United States, December 1860.

ized in 1785, 1786, 1791, and 1798. The bridges on the great State thoroughfares had up to the year 1800 cost from \$36,217 to \$60,000 each, with spans varying from 176 to 240 feet. Those over the creeks and small streams, with spans from 20 to 100 feet, had cost \$500 to \$8,000.¹

Maude found a bridge over the Seneca River near Geneva in 1800,² but in 1804 there was no bridge finished at Wattle's ferry, on the Susquehanna end of Catskill Turnpike, though there was one building at that time.³

The attitude taken in early days in regard to bridges over navigable streams is well illustrated in connection with a petition which was presented in the House of Representatives by inhabitants of the District of Columbia, praying that a company be incorporated for the purpose of erecting a bridge over the Potomac River at Washington. Other citizens of the District presented a remonstrance against the proposition, alleging that the commercial interests of Georgetown would thus be materially damaged.⁴ A committee reported, February 4, 1805, that by such a proposed bridge a saving of several miles of distance over a very bad road between the seat of government and the town of Alexandria would be made; that, consequently, the southern mail could be transported to and from the City of Washington with greater expedition and security than was already the case; that communication between Alexandria and northern cities would be rendered more easy and safe, and the general interests of the United States, as far as transmitting mercantile information between the northern and southern sections of the Union was concerned, would be promoted. The committee, further, was of the opinion that the commercial interests of Georgetown would not be materially injured by the construction of the bridge, and recommended that the company be incorporated.⁵ About a year later (January 21, 1806) another report was submitted in the House of Representatives on the same subject. It was ascertained that the Maryland legislature had passed a law, December 29, 1791, authorizing the construction of a bridge at or near Georgetown, an act which involved the constitutional relations of the United States and the State of Maryland. The report more fully considers the petitions for and the remonstrances against the incorporation of the bridge company and expresses the opinion that on the whole the public interests would be greatly promoted by the erection of the proposed bridge and accordingly favors the incorporation of such a company.⁶ The significant feature

¹Collins, *Historical Sketches of Kentucky*, I, 541-542.

²Maude, *Visit to the Falls of Niagara in 1800*, p. 49.

³Hulbert, *Historic Highways*, XII, 152-153.

⁴June 8, 1852, the people of Georgetown entered a protest that they had been "grievously injured for the long period of 45 years by the erection of the Potomac Bridge below the harbor of the town." Ellet, *Report on a Suspension Bridge across the Potomac for Railroad and Common Travel*.

⁵*American State Papers, Miscellaneous*, I, 422.

⁶*Ibid*, I, 437.

of the matter is that there should have been hesitation in reference to an enterprise which we should to-day consider an absolute necessity.

In 1807 a bridge, begun the previous year, was building in Rhode Island,¹ to connect the northeast end of the island on which Newport is situated with the mainland in Tiverton at Howland's Ferry. The whole distance from the island to the mainland was 1,524 feet, and 864 feet between the abutments of the old (wooden) bridge. The plan was to build up the whole passage except 65 feet near the center of the river, over which a drawbridge was to be thrown. The work was already partially completed, and the entire cost was estimated to be \$80,000. The bridge was designed to establish a permanent connection with the mainland, and would furnish the shortest and the most direct route to Boston and the only way to New Bedford. To travel to Boston via Providence required two days, but by means of the new route a line of stages would cover the distance in one day with great ease.

La Rochefoucauld found only a ferry across the Connecticut River at Hartford.² In 1809, however, a bridge was built, at a cost of over \$100,000. This bridge had 6 arches of 150 feet each. The Enfield Bridge, built in 1808, at a cost of \$26,000, was the first bridge erected across the Connecticut River in the State of Connecticut. It was 1,000 feet long.³ Both Weld and La Rochefoucauld refer to the bridge over the Mohawk at Choz (Cohoes). The former describes it as a "new bridge" constructed of timber and resting on stone pillars at the distance of 25 or 30 feet from each other. It was upwards of 360 yards long and 8 yards wide.⁴ It appears that about 1810 the ferries along the Mohawk and the western streams of New York were being replaced or had been replaced by bridges. Clinton states that at that time an excellent bridge of uncommon strength was being erected at a ford of the Genesee River, about 12 miles from Great Falls and 7½ miles from Lake Ontario.⁵

There were three "great bridges" on the course of the Philadelphia and Lancaster Turnpike in 1808:

The "Permanent Bridge" over the Schuylkill at the beginning of the road, erected at an expense of nearly \$300,000 by a separate company, and consisting of a superstructure of wood resting on large piers and abutments of solid masonry; abutments and wings 750 feet in length; bridge 42 feet wide; 3 arches, the middle one being 194 feet 10 inches long, the other two 150 feet each.

The bridge over the Great Brandywine at Downingtown, constructed of limestone and consisting of three arches, built by the turnpike company at a cost of \$12,000.

The bridge over the Conestoga near Lancaster, consisting of nine arches, and owned by an individual who had built it at his own expense.⁶

¹*American State Papers, Miscellaneous*, I, 868.

²La Rochefoucauld, *Travels through the United States*, I, 517.

³Pease and Niles, *Gazetteer of Connecticut and Rhode Island*.

⁴Weld, *Travels through the States of North America*, 199.

⁵Campbell, *Life and Writings of DeWitt Clinton*, 112.

⁶*American State Papers, Miscellaneous*, I, 893.

Table 6 gives a list of toll bridges in the State of New York, with the amount of capital stock belonging to the respective companies at the beginning of 1808.¹

TABLE 6.

	<i>Capital stock.</i>		<i>Capital stock.</i>
Schoharie-kill bridge.....	\$10,000	Schoharie Creek, north.....	\$5,000
Catskill.....	5,000	Wallabout and Brooklyn.....	15,000
Cayuga.....	25,000	Delaware.....	20,000
Canajoharie and Palatine.....	10,000	Susquehanna.....	20,000
Jericho.....	10,000	Canton.....	6,000
Troy.....	150,000	Farmer's.....	3,000
Fort Miller.....	40,000	Cohoes.....	7,500
Union.....	50,000	Jefferson.....	4,000
Newtown and Bushwick.....	7,500	Mohawk (stock included in Mohawk	
Montgomery.....	13,500	Turnpike).	
Schoharie and Cobleskill.....	6,000		
Fort Hunter.....	7,500		
			415,000

The bridges in Massachusetts at this time were generally of wood, with stone abutments, a few of the bridges being constructed "with arches on geometrical principles."²

Clinton found an excellent bridge over the Mohawk between Herkimer and German Flats, and also a new bridge over the same stream 74 miles from Schenectady.³ A toll-bridge over the Seneca River at Columbia was nearly completed.⁴ Another bridge was to be built 8 miles above Columbia, where at that time there was only a ferry.⁵ He records the fact that the old bridge across Lake Cayuga had been carried away by ice, and that a new one had been built and placed at the outlet, 2 miles from the old site.⁶

During the period immediately following the Revolutionary War, the bridges constructed were with few exceptions of a simple and primitive character. There ensued, however, a period during which bridge-building on a more elaborate scale became "epidemic" over considerable sections of the country. Fine wooden and stone bridges were built throughout Maryland, Pennsylvania, and upper Virginia. "On all the turnpikes the bridges equaled the roads." The traveler Melish, in 1812, makes special mention of the Trenton Bridge, "very elegant, nine hundred seventy feet long, with two carriage ways"; the West Boston Bridge, "three thousand feet long with a causeway three thousand more"; and of the Schuylkill Bridge, which cost over \$200,000.⁷ The bridges of Pennsylvania were especially elegant and substantial. By 1813, 36 charters for toll-bridges had been granted in New York, and stock to the amount of \$509,000 had been created

¹*American State Papers, Miscellaneous*, I, 874.

²*Ibid.*, 867.

³Campbell, *Life and Writings of DeWitt Clinton*, 48.

⁴*Ibid.*, 88. Columbia village was 12 miles above Three-River Point by land, and was laid out by Dr. J. C. Baldwin, who had a dam across the river and a canal 100 rods long with two locks.

⁵*Ibid.*, 90.

⁶*Ibid.*, 96. Other bridges noted.

⁷Earle, *Stage Coach and Tavern Days*, 230; Melish, *Travels in America*, 79, 114, 127

by the corresponding companies.¹ The bridges erected in New York within the 10 years previous to that time, and those, too, of a very considerable magnitude, were "almost innumerable." About 35 of these were authorized to collect tolls. The first bridge that crossed the Hudson at that date was at Waterford, and the next was at Fort Miller. Both were toll-bridges. The toll-bridge across the Mohawk, one mile below Cohoes, was completed in 1795 at a cost of \$12,000. It was 1,100 feet long, 24 feet wide, and rested on 13 stone pillars. Thence to Schenectady was one other toll-bridge, and at Schenectady "one of the best toll-bridges in the State." There was a very good bridge over the Mohawk at Utica, and some others below. According to Spafford, the Cayuga bridge was destroyed in 1807 and had not been rebuilt. It cost \$20,000 and was a mile long.

There were bridges in every direction where roads crossed the numerous rivers and streams, and the plan of building was in general good. Spafford was of the opinion, however, that it would be wise to follow the Pennsylvanians in the use of more stone and iron, which would increase the first cost, but be more profitable in the end. The bridge at Rochester, New York, was begun in 1810 and finished in 1812, at an expense of \$12,000, which was defrayed by a taxation of Ontario and Genesee Counties. The project met with much opposition and it was asserted that the bridge at Avon, 20 miles south, was sufficient for public accommodation. The crossing had previously been made at a ford, "with not unfrequent accidents."²

The bridge at Rochester was constructed in 1818-19 (completed February 1819) and consisted of one entire arch, the chord of which was 352 feet and the versed sine 54 feet. The summit of the arch was 196 feet above the surface of the water. The entire length of the bridge was 718 feet and the width 30 feet. Soon after its completion loaded wagons with more than 13 tons weight passed over it without producing any perceptible tremor. The bridge stood about a year. The immense weight of the timber pressing unequally upon the arch forced the center from its equilibrium, and the whole structure, excepting a small portion on the east bank, fell into ruins. This bridge was afterwards rebuilt in a similar manner, 713 feet long, 30 feet wide, and the same height above the water. It contained 64,620 feet of lumber, board measure, in addition to the 20,806 feet of timber contained in the false bridge or supporter. It was built within 9 months by the labor of somewhat less on the average than 22 workmen.³

Bridges were built across the Allegheny and Monongahela Rivers at Pittsburgh in 1819.⁴ Faux, traveling a little later in the western country, says little of bridges, but much of fords and ferries; he refers, however, to "the fine covered bridges over the two rivers . . ." at

¹Spafford, *Gazetteer of the State of New York*, 16.

²O'Reilly, *Settlement in the West*, 243.

³*Niles' Register*, XVI, 142, Apr. 17, 1819.

⁴Craig, *History of Pittsburgh*, 288.

Pittsburgh, which cost \$10,000 each.¹ Within the six years preceding 1815 Pennsylvania passed about twenty acts for the construction of toll-bridges.²

With the building of the Cumberland Road toward the Ohio River attention was directed to the crossing of the river at Wheeling, and in February 1816, Virginia granted to Noah Zane and others a charter to build a bridge at that place. Ohio assented to this charter by an act of the legislature in December of the same year.³ The first stone of the first bridge over the Ohio River at Wheeling was not laid, however, until February 1, 1836.⁴ A bridge had been built over the Miami River at Dayton, Ohio, before 1819. This was "a very fine structure," consisting of two arches of timber, each 100 feet long, resting upon two stone abutments and one stone pier in the middle of the river, the latter being sunk 12 feet below low water. The whole length was 250 feet and the width was 26 feet. The bridge was weather-boarded and roofed,⁵ a fact which was true of many of the wooden bridges of the country. There was also a bridge across the Muskingum River at the town of Zanesville at an early date. According to Kilbourn's *Gazetteer of Ohio* (1819), an "elegant, substantial, and costly bridge on hewn-stone piers" had been recently erected across the Muskingum between Zanesville and Putnam. There was also another bridge across the Muskingum at Zanesville. Outside of a few such bridges here and there, however, the crossings of the streams in the western States during this period was effected by bridges of a primitive and unsubstantial character, or by ferries, or even at fords.

During the session of 1818-19 the legislature of the Territory of Illinois authorized the construction of a "floating bridge" over the Kaskaskia River between Shoal and Crooked Creeks, in Washington county.⁶ During the same session the construction of toll-bridges by certain persons was authorized across Big and Little Beaucoup Creeks, on the road from Shawneetown to Kaskaskia.⁷ During the session of 1820-21 the legislature passed an act giving the power to regulate tolls on certain toll-bridges to the county commissioners, but stipulated that the tolls were not to be fixed at less than 12 cents for a man and horse and 50 cents for a wagon and four horses. After the expiration of five years the commissioners were empowered to make bridges public property, on condition that the full cost of construction, together with 6 per cent interest on the same, be paid the owners.⁷

¹Faux, *Memorable Days in America*, 342.

²*Niles' Register*, IX, 143, Oct. 28, 1815; Babcock, *Rise of American Nationality, 1811-1819*, p. 249.

³*Monthly Chronicle of Interesting and Useful Knowledge*, I, 8-11, January 1839; see also "Argument for the defendants in the case of the State of Pennsylvania vs. Wheeling and Belmont Bridge Co., in Supreme Court of United States."

⁴*Niles' Register*, L, 3, March 5, 1836.

⁵*Ibid.*, XVI, 142, April 17, 1819.

⁶Illinois Territory, *Laws*, 1817-18, pp. 36-37.

⁷*Ibid.*, 55.

Freshets played sad havoc with these early bridges, and they were often not rebuilt for years. The bridges across the small streams in Washington County, Ohio, were said in 1819 to be generally kept in repair, though subject, in the manner first stated, "to many casualties from the high water." There had formerly been a bridge across the Little Muskingum at the mouth, consisting of one arch of about 150 feet, supported by stone abutments. This bridge was demolished by a high freshet in 1808, and a grant had just been made (1818) to a company to rebuild it and take toll for passage. At that time two "handsome toll-bridges" existed across Duck Creek, in that county, one at the mouth, and the other 2 miles up the creek.¹

Palmer in 1818 characterized the bridge over the Schuylkill just outside the precincts of Philadelphia as the best single-arched bridge that he had ever seen, and said that this bridge and the permanent bridge at the end of Market Street were the "two handsomest bridges in the United States."² He notes the excellent bridge across the Delaware at Trenton, New Jersey, a structure 1,100 feet long, with 5 arches, and said to have consumed 169,223 feet of cut stone.² He notes on a journey from Boston to Burlington, Vermont, that the road, bridges, and accommodations were good, and says that he has been given to understand that they were that way generally in New England, and that there had been much improvement made in the previous few years.² He finds roads and bridges in Vermont much improved of late years, but are still indifferent in places.² Between Philadelphia and Camden he found one team and two steam ferries constantly working 6 boats.²

Niles' Register notes the following load carried in 1816 by the team ferry-boat over the Hudson at Newburg, New York: one coach and horses, a wagon and horse, 17 chairs and horses, one horse, and 50 passengers. This ferry was regarded as affording an illustration of a safe, cheap, and expeditious transportation in places where the building of bridges was inexpedient or impracticable.³

The Montezuma bridge, between the village of that name and the town of Mentz, in New York, over the Seneca River and marshes, 3 miles in length, and said to have been the longest in the world, was in 1819 the third bridge over the waters of Cayuga Lake and Seneca River in the space of 7 miles. This fact was taken as a remarkable illustration of the progress of improvement in that section.⁴

John Duncan was impressed with the size and peculiar style of structure of the several large bridges over the Schuylkill in the neighborhood of Philadelphia, mostly with three arches, but one of which

¹Hildreth, "Notes on Ohio," in *American Journal of Sciences and Arts*, X, 324.

²Palmer, *Journal of Travels*, 9, 172, 199, 240, 288.

³*Niles' Register*, XI, 13, Aug. 31, 1816.

⁴*Ibid.*, XVI, 142, April 17, 1819.

had a single span of 340 feet 9 inches.¹ He characterizes the bridge over Cayuga Lake in New York as a "prodigious structure" and as proof of the enterprise and perseverance of the national character.²

Charles Dickens described the bridge over the Susquehanna in 1841, on the road from York to Harrisburg, as being a wooden bridge, profoundly dark, and nearly one mile long, and with a confusing number of beams.³

In Connecticut in 1819, both upon public and turnpike roads, there were substantial and convenient bridges across small streams in all parts of the State, as well as several bridges across the large rivers. The one at Hartford, across the Connecticut, nearly 1,000 feet in length, was said to be one of the most elegant and expensive bridges in the United States. Other bridges specially noted were the bridge across the Connecticut between Enfield and Suffolk and the Washington bridge across the Housatonic between Milford and Stratford. The most important and extensive bridge in Rhode Island at that time was the one connecting Portsmouth with Tiverton at Howland's ferry, which was of stone and nearly 1,000 feet long. There were numerous convenient bridges in every part of the State. The harbor bridge in New Haven, Connecticut, was one-half mile in length and 27 feet wide.⁴ By 1823 there were 59 incorporated bridge companies within the State of New Hampshire. At that time there were 16 bridges across the Connecticut River in New Hampshire alone.⁵ In another place the statement is made that there were from 20 to 30 bridges over the Connecticut between the source and mouth, of which 16 were in Connecticut. Boston was connected about 1820 with adjacent towns by 4 wooden bridges.⁶

It does not seem to have been the case that bridges were built over all of the streams on the Cumberland Road during the early stages of its construction. A number of the inhabitants of the western counties of Pennsylvania had petitioned that a bridge be built across the Youghiogeny River on that road, but a committee in Congress reported adversely on the petition.⁷ It has been already noted that the first bridge over the Ohio River at Wheeling was not begun until 20 years after the first company was incorporated for that purpose. Many of the early bridges constructed on the Cumberland Road were unsubstantial wooden structures and had to be replaced in a few years by better ones. The later bridges on that road were generally fine, substantial structures, and many of them remain in almost perfect condition at the present time.

¹Duncan, *Travels through Part of the United States and Canada in 1818 and 1819*, I, 213.

²*Ibid.*, I, 286.

³Hulbert, *Historic Highways*, XII, 177.

⁴Pease and Niles, *Gazetteer of Connecticut and Rhode Island*.

⁵Farmer and Moore, *Gazetteer of New Hampshire*, 1823, p. 17.

⁶Kayser & Co., *Commercial Directory*, 83 *et seq.*

⁷*American State Papers, Miscellaneous*, II, 182.

By the close of 1821, besides bridges erected by individuals, authority had been granted to companies in Pennsylvania for the construction of 49 bridges, of which grants 30 had been confirmed by letters patent.

It is clear that in bridging the waterways great and substantial progress had been made during the period in improving the means of transportation and communication. This was especially true in the older States.¹ In the South and on the ever-advancing frontier, however, there was a marked deficiency in improvements of this kind. Primitive conditions continued to obtain to a large extent.

TRAVELERS' ACCOUNTS OF EARLY ROADS.

Something of the character of the roads over which early commerce passed, and by means of which emigrants transferred themselves and their belongings to new homes on the frontier, may be inferred from the foregoing account of the development of the main thoroughfares. A more detailed description of the roads themselves and of their maintenance in condition for traffic or of their neglect from year to year may be gathered from the writings in which travelers who visited the country in the period antedating the railroads have recorded their personal experiences. From these accounts, however, it is difficult to arrive at generalizations. The state of the roads varied in different sections of the country, at different seasons of the year, at different times during the period under consideration, and apparently with the degree of prejudice or irritability of those who traveled over them.

Contributing to the road-making impulse immediately after the War of Independence was a newly awakened community interest. American commerce was largely dependent upon the development of our natural resources, and the settlement of the interior strengthened the interdependence of the commercial class and the farmers, since both classes found a common interest in internal improvements. As an impetus to road-building, the commercial motive had been strong even in early days. In 1748, when the Ohio Company was organized to trade with the Indians and to develop the Ohio Valley, a party sent out by them was able to proceed only so far as the present site of Cumberland. Beyond this point, where a post was established, only Indian trails led to the West. Many leading men, among them Governor Dinwiddie, were interested in this company. When the route of the expedition against Fort Duquesne was under consideration, the Potomac route was selected, and the soldiers were put to work building a military road. The time, which might have been saved if the shorter Pennsylvania route had been chosen served to give the French ample opportunity to prepare for the invasion.

¹See Welby, *A Visit to North America and the English Settlements in Illinois*, 38, 146, for views of the bridge over the Susquehanna at Columbia and of the bridge over the Muskingum at Zanesville, Ohio.

After the Revolution, road-making became increasingly popular, as migration set more strongly towards the West, and the public spirit was reflected in generous grants by the legislatures. In 1783 the first mail service was established between Albany and Schenectady. In 1785 and 1786 Pennsylvania passed laws for the construction of roads to the interior. This activity increased until by 1791 it was styled a "mania." A single act appropriated \$150,000 for the improvement of certain rivers and more than a score of roads in different parts of the State. The first turnpike, between Alexandria and the Lower Shenandoah, was begun in 1785-86, to the great joy of Jefferson and other public-spirited Virginians, who foresaw the new national life to be given by the development of transportation.

Seybert¹ was of the opinion in 1818 that in reference to post-roads and a postal system our progress was equal to that of any of the nations of Europe, and asserted that "convenient roads now intersect every portion of the United States." Though admitting that we did not possess many routes equal to the most improved in England and France, our roads were more safe, more expeditious, and better regulated than those of any nation in Europe. He asserted that even so late as 1750 the roads in Great Britain and France were in a wretched condition, though much had since been done to improve them. In 1763, in going from London to Edinburgh in the stage-coach, a distance of about 400 miles, 17 days were occupied. In 1812, in France, 6 days were required to go by stage-coach from Paris to Geneva, 390 miles; 6 days from Paris to Basel, 369 miles; and 5 days from Paris to Strassburg, 366 miles. In 1816 one might have gone from the city of New York to Buffalo on Lake Erie, 475 miles, in 100 hours from the time of departure, and be comfortably lodged every night, the time actually occupied in traveling being 80 hours. It was possible to go from Philadelphia and Baltimore to Pittsburgh by stage, 310 miles, in 5½ days, and be lodged every night on the route. The passage from Philadelphia to Quebec could be made in 7 days. He stated that our mail was then transported with uncommon rapidity through country which continued to be inhabited by savages, and that our vehicles passed with more speed to towns, the sites of which 25 years before were the theaters of savage barbarity, than did the public carriages in some of the most civilized and oldest countries in Europe.

Alice Morse Earle² also takes the position that our roads compared favorably with those of other countries. The English roads were said to have been so bad at the close of the eighteenth century that it required "two days and three nights' continuous travel to go down from Manchester to Glasgow, while the cross-roads were even worse."

¹Seybert, *Statistical Annals of the United States, 1789-1818*, pp. 375 et seq.

²Earle, *Stage Coach and Tavern Days*, 230-231. See also Rantoul, *Some Notes on Old Modes of Travel*, 36-37.

"When a mail coach was put on the Holyhead Road in 1808, twenty-two townships were indicted for having their roads in a dangerous condition." Further, roads similar to the macadamized roads had been made in Pennsylvania long before they were laid in England and had been tested. As Macadam went to England from America in 1783, he doubtless only followed methods he had seen used with success in the latter country in constructing the roads called after his name in England. Not to speak of others, "the Salem and Boston Turnpike, the Essex Turnpike between Salem and Andover, and the Newburyport Turnpike, all macadamized roads, were in successful operation before Telford and Macadam had perfected their systems."¹ La Rochefoucauld and other Frenchmen are quoted as having praised our roads. Ernst, an authority upon transportation and postal matters, is quoted as being of the opinion that our roads in the northern provinces were on the whole excellent. The actual cost of Massachusetts roads is, by way of illustration, offered in support of this opinion. The great use of pleasure carriages in this country is also cited as a proof of good roads. The fact that the English carriages were very heavy, while in America the light-weight continental carriages were adopted, is taken as a further proof that our roads were good.²

On the other hand, it must be acknowledged that there was a vast deal of criticism of our early roads, not only by English travelers, some of whom were by no means unprejudiced, but also by travelers of other nationalities, even by those who were disposed to look with much favor upon our institutions. Nor are witnesses among our own people wanting who testified to the bad character of our thoroughfares. Given the natural physical and climatic conditions throughout a large portion of our country, and considering the dearth of means assignable for repairs and the sparseness of our population as compared with the great mileage of our roads, we can reasonably conclude *a priori* that our roads were in general not likely to have been of the best. It is not sufficient to show that transportation was in some cases comparatively rapid in this country in order to prove that our roads were good. On the other hand, travelers from foreign countries universally remarked upon the rapid and reckless, though skillful, driving, when the state of the roads was considered. Neither did the lightness of our carriages prove to foreigners the superiority of our roads, but rather the superiority of the carriages themselves, recognition of this superiority being a tribute often paid by travelers, who were amazed that the carriages were not more often wrecked.

Furthermore, when we consider the indifferent character of many of our roads to-day in various parts of the country, even with all our

¹Earle, *Stage Coach and Tavern Days*, 231. See also Rantoul. *Some Notes on Old Modes of Travel*, 36-37.

²Earle, *Stage Coach and Tavern Days*, 227.

present advantages, it is not difficult to conceive that our early roads left very much to be desired. An authority on roads in this country asserted that the common roads of the United States were inferior to those of any other civilized country, their faults being "those of direction, of slopes, of shape, of surface, and generally of deficiency in all the attributes of good roads."¹ Some of these defects were asserted to be the unavoidable results of scarcity of labor and capital in a new country, though most of them were said to be due to ignorance. It is reasonable to suppose that labor and capital were relatively less available for enterprises involving great expenditure previous to 1820 than they were in 1850, and that there existed during the earlier period a greater degree of ignorance in respect to the principles of road construction.

It is not improbable, on the other hand, that the introduction of steam navigation, and later of railway transportation, resulted in some cases, temporarily at least, in neglect of the common roads, especially those parallel with the navigable water-courses or railroads. This effect was observed in England upon the introduction of railroads there. Travel on the turnpikes and other roads declined, and toll receipts diminished; and both the incentive and the means for repairing the roads having been lessened, they were permitted to deteriorate.² The Cumberland Road is a striking illustration of similar results in this country. In the case of this road the railroad was the cause of its decline. Not a few illustrations may be cited where the introduction of steamboats led to a like result.³

One characteristic of early roads—alleged of New England roads, but similarly true of early roads in other sections and still true of roads in many parts of the country—was that they were built "not so much on mathematical as on social principles";⁴ that is, instead of being located on the best and shortest routes, they were too much subordinated to local and individual interests, which often resulted in bad locations and in long, indirect, and devious routes. According to Travis's *Almanac* (Boston, 1713), the road from Boston to Portsmouth was 62 miles in length, not counting the ferries, as shown in table 7.

TABLE 7.

	Miles.		Miles.
From Winisimit to Owens.....	4	From Winisimit to Newbury, via Thurrel's	
to Lewes's	2½	Bridge.....	8
to Salem.....	9	to Newbury, via the ferry.	7
to ferry at Beverly	1	to Salisbury.....	2½
to Wenham.....	5	to Hampton.....	4½
to Ipswich.....	6	to "Sherbons at Said	
to Rowley ("half-way		Town".....	2
house").....	3½	to Greenland.....	8½
		to Portsmouth.....	5½

¹Gillespie, *Manual of the Principles and Practice of Roadmaking* (8th ed.), 3.

²Earle, *Stage Coach and Tavern Days*, 231-232.

³See *American State Papers*, Post Office Department, 136; Hulbert, *Historic Highways*, XI, 104-105.

⁴Rantoul, *Some Notes on Old Modes of Travel*, 22-23.

The route from Salem to Boston was 22 miles at the time of the Revolution:¹ to Danvers, 2 miles; to Lynn, 7 miles; to Malden, 6 miles; to Medford, 3 miles; to Boston, 4 miles. This feature of early roads attracted the attention of others than practical road-builders.² During the years 1765 to 1768 attempts were made in the New Jersey legislature to raise funds by lottery for shortening and improving the great thoroughfares, but without success. Governor Franklin, referring to the roads in a speech to the assembly in 1768, stated that even those which lay between the two principal trading cities of North America, Philadelphia and New York, were seldom passable without danger or difficulty.³

Since physical characteristics did not in general favor the use of canals in New England, more attention was bestowed upon roads, and as a result that section of the country had a large number of roads at an early date.⁴ According to McMaster, there were no bridges over the great rivers in 1784, roads were bad, and all journeys were made on horseback or in stage-coaches or in boats.⁵ Thomas Twining, traveling in the United States in 1795 or 1796, found the road from Philadelphia to Baltimore via Derby, Chester, Wilmington, Newark, etc., "newly and roughly formed, furrowed with ruts and strewn with large stones." There were steep ascents and descents, and he found the jolting of the wagon almost insupportable. He finally reached the head of Chesapeake Bay "after the roughest journey" he ever had.⁶ Upon leaving Baltimore for Washington in April the stage-coach crossed the Patapsco River in a ferry-boat, and then followed a road which was "only a line" and which was "in a very rude state, the driver being obliged to wind as well as he could between the remaining stumps." The pace was in this case slow, "not exceeding 13 miles in 4 hours." The last stage of 12 miles, however, he designated as "pretty good as to road."⁷ In Washington City he described an avenue where the trees had been cut down in a straight line, "no doubt one of the streets of the metropolitan city." Upon the journey from New York to New Brunswick via Newark and Elizabethtown, he met with a similar experience of bad roads, and having passed through Princeton and Trenton, he recrossed the Delaware "after the roughest night's journey he had ever had in a stage-coach."⁸

Elkanah Watson traveled over the road from Albany to Schenectady in 1791 and found it "in a shameful condition." He pronounced the

¹Rantoul, *Some Notes on Old Modes of Travel*, 24.

²*Ibid.*, 23, for an account of "Browne's Folly" by Hawthorne.

³Hazard, *United States Commercial and Statistical Register*, III, 175, Sept. 1840.

⁴For an enumeration of the different public ways granted at Ipswich, 1635-1824, see Felt, *History of Ipswich, Essex and Hamilton*, 49-52.

⁵McMaster, *History of the People of the United States*, I, 44-52.

⁶Twining, *Travels in America One Hundred Years Ago*, 60-80.

⁷*Ibid.*, 94-97.

⁸*Ibid.*, 100, 140-141, 157-158.

roads and bridges "infamous" and declared the road system then existing to be a disgrace to the State and that there was great need for a radical change. He found on the highways numerous gates erected for private convenience, which he naturally declared to be public nuisances.¹

Weld, traveling at the same period, notes that the roads in Maryland passed along the ridges, and states that the reason assigned for the selection of the routes was that roads so located were more durable than on the deep soil in the level parts of the country, a circumstance of great importance to those who never attempt to keep their roads in repair. The road from the ferry over the Susquehanna he describes as execrable.²

He thus describes the road from Baltimore to Washington:

"The roads are so exceedingly bad that a carriage will sometimes sink so deep as to defy the utmost exertions of the strongest horse to draw it forwards; and in some parts that would be otherwise totally impassable, causeways constructed of trees are thrown across the road; but these frequently break asunder and constantly expose a traveler to the most imminent danger. The bridges built across the creeks are equally perilous, being formed of a few loose boards that totter while a carriage passes over them. Such is the high road to the federal city of Washington."²

He passed over the turnpike from Philadelphia to Lancaster, and found that it was "by no means an object of satisfaction to the people, who would prefer the inconveniency of the most execrable roads to parting with the small sum required as the toll."² On the way from Albany to Skeensborough he traveled with a "tolerable degree of pleasure and facility" until he reached Fort Edward, whence the road became "truly execrable" as far as Fort Anne (8 miles of corduroy), when it again grew better.²

La Rochefoucauld, a contemporaneous traveler, found extremely good roads in Herkimer County, New York.³ In the District of Maine, however, he found "execrable" roads and ferries. There he found the "worst accommodations of any place in America," and the conditions of human life he describes as "exceedingly wretched." The road from Plymouth to New Bedford he found tedious and imperfect. Though he occasionally speaks specifically about certain roads being "excellent," yet it is apparent that many times when he characterizes them as "delightful" he has reference to delight from a scenic point of view. Traveling in April 1795 from Philadelphia to Norristown by the "Ridge Road," he described it as being "very bad," as in fact were all the public roads in the State of Pennsylvania, a cir-

¹Watson, *History of the Rise, Progress, and Existing Condition of the Western Canals in New York*, 25-26.

²Weld, *Travels through the States of North America*, 41-42, 47-48, 89-93, 201-202.

³La Rochefoucauld, *Travels through the United States*, I, 359.

cumstance probably resulting from the continued passage of large, heavy-laden wagons, appointed to bring provisions from all parts of the country to the market of the capital. He proceeded on horseback from Lancaster via Maytown, Middletown, Harrisburg, Sunbury, Northumberland, Berwick, Wilkes-Barre, Wyalusing, Asylum, Old Sheshequin, Tioga, New Town, Painted Post, Bath, Crooked Lake, Friendsmill, Lake Seneca, Canandaigua, Williamsburg on the Genesee, and Canawaga to Buffalo, and thence to Canada. Between Berwick and Wilkes-Barre, unable to discover any beaten track, he experienced much difficulty with the road, and also with a ferry over the Nescopoc River. From Wilkes-Barre he proceeded in a beaten track, though almost impassable in many places, obstructed by fallen trees, dangerous declivities, etc. There was not an inn on the road, and the ferry 32 miles from Wilkes-Barre he characterizes as "wretched." The road from "Tonowante" to Buffalo he found "truly execrable."¹ It is difficult to find any cordial indorsement of the character of our roads by this traveler.

Maude, passing over the road in New York from Geneva to Canandaigua in 1800, describes it as almost as bad as a road could be.² The "new road" between German Flats and Utica he describes as "very bad."

Michaux in 1802 describes the road from New Orleans to Natchez as "only a path," though the Federal Government was about to complete a new one.³ However, he found the road from Nashville to Knoxville, Tennessee, leading over the Cumberland Mountains, as "wide and as well beaten as those in the environs of Philadelphia," on account of the great number of emigrants who traveled it on the way to the western country. In some places, however, he found it very bad. Nevertheless, 40 miles from Nashville he met some wealthy emigrants traveling in a carriage and followed by their negroes on foot who had "passed the road so far without accident." On crossing out of the Great Valley in Tennessee from Jonesborough over Iron Mountain into North Carolina at Morgantown, he found part of the road an almost untrodden path, where he was in great danger of losing his way. Other parts were impassable by horseback, and he was compelled to dismount and walk. Of the 170 or 180 miles on the Pennsylvania Road from Shippensburg to Pittsburgh, over which there was no public conveyance at that time, he estimated that not 50 "toises" were passed without ascending or descending.

The itinerary of Michaux's trip was as follows: He left Philadelphia on June 2, 1802, going to Pittsburgh by the great central road;

¹La Rochefoucauld, *Travels through the United States*, I, 81, 174. It must be remembered that this route from Pennsylvania into New York had just been opened, and that western New York was beginning to be settled.

²Maude, *Visit to the Falls of Niagara in 1800*, p. 95.

³Michaux, *Travels to the Westward of the Allegheny Mountains*, 251.

thence he passed down the Ohio River via Wheeling to Limestone, Kentucky; from there he traveled to Lexington and Nashville, thence to Knoxville, and from there across the mountains into North Carolina, whence he traveled to Charleston, reaching that place October 18, 1802, 3½ months after his departure from Philadelphia, having traveled nearly 1,800 miles.

The road between Paulus Hook, the modern Jersey City, and Hackensack was declared by the newspapers in 1802 to be as bad as any other part of the route between Maine and Georgia.¹ In a report upon post-roads in 1802, however, the road between Augusta, Georgia, and Louisville, Kentucky, is characterized as a good road, with bridges over all the principal streams—a road much traveled. Between Petersburg and Fayetteville there was a ferry crossing the Roanoke River, while the Cape Fear River was forded in summer and dry seasons. In the winter a flat-boat ferry was in operation over the latter stream. On the road from Fayetteville to Columbia there were also bridges or ferries over the water-courses. The road was characterized as good between Columbia and Augusta, Georgia, there being no water embarrassments but what were provided with good boats and bridges. The road was said to be much traveled in the country, rapidly increasing in population and improvements. The country from Fayetteville to Lumberton was generally poor, but the road very good; the road from Lumberton to Greenville was “on the whole pretty good.” The road from Greenville to Georgetown, South Carolina, 100 miles, was good and much traveled, and stages already ran from the latter place to Savannah, Georgia. From Greenville to Camden the road was more sandy, but there was “no serious difficulty with watercourses.” From Camden to Columbia the road was “very sandy,” and beyond Columbia was of much the same nature apparently.

A general scarcity of public houses in most of the Southern States was noted, though there was usually one, “good or bad,” at the end of every 18 or 20 miles, more or less.² It is apparent that the standard of excellence applied in this report is not very high. Still, by 1805 lines of stages for the conveyance of mail and passengers were in operation throughout the whole route from Wiscasset in Maine to St. Mary’s in Georgia.

December 22, 1804, Isaac Briggs, a surveyor-general of the Federal Government, reported on the examination of a “mail road” from Washington to New Orleans and recommended a route, of which he characterized the portion between Washington and Fredericksburg as being “much the worst part of the whole route.” He adds that it must be granted that “few, if any, other parts of the world admit

¹Adams, *History of the United States*, I, 11.

²*American State Papers, Post Office Department*, 24–26.

of a road equally good and equally direct for so small an expense."¹ Briggs had volunteered for this work, being about to set out for Natchez, anyhow, in consequence of his appointment as surveyor-general of the United States lands south of the State of Tennessee. The offer, however, resulted in his undergoing unexpected expense and great hardships, as he found the enterprise "expensive, laborious, and tedious, infinitely beyond expectation." Accordingly, he presented a petition (March 18, 1808) asking for compensation.²

A report of the Postmaster General in 1806 (March 21), in reference to the obstructions to the transmission of the mail from Athens in Georgia to New Orleans, gives a detailed description of the route followed. In some places the road had never been cleared, or was greatly obstructed by fallen trees. There were numbers of streams to be crossed, over which there were neither bridges nor ferries and over the narrowest of which trees were felled, which enabled the post-rider to creep across, holding the mail on his own back and swimming his horse. Over the wider streams dependence was had upon canoes furnished by families living near the crossing. The report well illustrates the primitive conditions of transportation and communication between the North and South at this period.³ In 1813 the usual rate of travel in transporting the mail was 40 miles per day on cross-roads and 60 to 120 miles in 24 hours between the large commercial towns. From Philadelphia to New York, Baltimore, and Washington the speed was at the rate of about 7 miles an hour.⁴

The poor facilities of transportation during the War of 1812 and the consequent difficulties in forwarding troops and supplies, and the enormous cost of carriage involved, will be discussed in a later chapter.⁵ Testimony either as to the entire lack of roads or as to the bad character of those which existed is overwhelming. Roads had to be created by General Harrison in his campaigns in the Northwest and by other American armies on their various movements. As has been noted elsewhere, the road cut by Harrison in the northwestern part of Ohio was not permanent and the location had to be changed later. In 1820, when the old road had been practically abandoned by traffic, its course was indicated principally by "the broken remnants of baggage wagons and gun carriages, scattered remnants of flour barrels, and the mouldering skeletons of horses and oxen remaining as they were left, just visible above the surface of the mud and wet which destroyed them." So late as 1820 the Black Swamp interrupted all communication by land between the settlements in Michigan and

¹*American State Papers, Post Office Department*, 35-38.

²*American State Papers, Claims*, 362. It appears that President Jefferson afterwards recompensed him out of his own private funds.

³*American State Papers, Post Office Department*, XIX, Class VII, 39.

It is to be noted that this is a separate route from the great mail-route down the Atlantic Coast.

⁴Seybert, *Statistical Annals of the United States, 1789-1818*, pp. 376 *et seq.*

⁵*Cf.* chap. ii, Tolls and Transportation Costs on Early Roads and Canals.

those of the interior of the country. With good roads, it was asserted, the country would never have been even temporarily lost.¹ Major General Gaines was of the opinion that in Ohio, particularly, the armies during the war had "sustained greater loss of health, if not of life, from the impracticable state of the roads and the want of canals than would have been sustained in the capture of the whole of Upper Canada, with the proposed improvement of the militia and of the means of transportation."² It was asserted that the bad roads from the seat of government to Buffalo had retarded the spread of intelligence and prevented quick concentration of troops and munitions of war; and that if there had been good roads the military disaster at the commencement of the war would never have occurred.³

The effect of the war in forcing the coastwise trade to be carried by land has already been noted, and although the final result counted for improvement of the roads, the immediate effect of the unusual amount of traffic was to cut up and wear the roads into a condition that made transportation over them exceedingly difficult. The Government, for example, was compelled, in the winter season of 1813, at an enormous expense, to convey by land, over the portage from the Chesapeake to the Delaware, by a road rendered thus almost impassable, the most bulky pieces of timber for the ship-of-line building at Philadelphia.⁴ As indicative of the enormous increase of land traffic along the coast at this time it was stated that 200 wagons had been in constant service during the last 3 months of 1812 from Boston to Providence, while before the outbreak of the war there had been only 2, which were regular baggage-wagons.⁵ In the summer, when the roads were good it required 26 days to go from Boston to Baltimore, 10 days from Baltimore to Richmond, and 33 days from Baltimore to Augusta, Georgia. From New York to Augusta required 50 days, and from Philadelphia to Augusta, 45 days.⁶ In the winter and spring, however, transportation was far less expeditious.

So manifest were the disadvantages involved in the bad character of the roads, as well as in the absolute lack of roads in some sections during the War of 1812, that there was a general movement to improve conditions as regards land transportation, and numerous projects were set on foot with that object in view.⁷ One of the great advantages resulting to Michigan from the War of 1812 was the construction of

¹*American State Papers, Miscellaneous*, II, 593. Report of committee in House of Representatives, May 12, 1820.

²*American State Papers, Military Affairs*, IV, 141.

³Speech of Mr. Hemphill in House of Representatives, March 23, 1830, on the bill to construct a national road from Buffalo, via Washington, D. C., to New Orleans.

⁴*Niles' Register*, V, 307, Jan. 8, 1814. Report of committee in House of Representatives relating to the Chesapeake and Delaware Canal.

⁵*Niles' Register*, III, 346-347, Jan. 30, 1813.

⁶McMaster, *A History of the People of the United States*, IV, 219.

⁷"The events of the late war have forcibly demonstrated the necessity of a good road from Plattsburg westward." *Niles' Register*, XIII, 64, Sept. 20, 1817.

fairly good roads connecting Detroit with the Ohio Valley.¹ Various military roads were constructed by the army and the sentiment for internal improvements in general increased with marked impetus.

Toward the latter part of the period under consideration, after the restoration of peace, another series of travelers passed over our lines of communication, and they have left their impressions of the characters of our roads. Birkbeck and his party performed the journey from Richmond to Fredericksburg, 69 miles, in 2 days, in hacks or light coaches, May 1817. He asserts that the road would be good during a great part of the year if a small degree of attention were directed to particular spots, trifling in extent, but very dangerous. A few dollars properly spent on the road from Petersburg to City Point would, he thought, have rendered it safe and even delightful.² He found such difficult roads from Pittsburgh to Washington, Pennsylvania, as would long render the latter "beautiful district toilsome to its inhabitants." The roads of eastern Ohio he found better attended to than those in Virginia and western Pennsylvania, or even in the neighborhood of the Federal city. Nevertheless, he speaks of sundry foaming creeks to ford and sundry log bridges to pass on the road from Wheeling to St. Clairsville, which were "a sort of commutation of danger"; "a very muddy road," he characterized it. The Ohio was crossed by a ferry at Wheeling, and the Wabash in like manner near Harmony, Indiana. The roads in Illinois he describes as being yet in a state of nature.³

Palmer, traveling from Washington, D. C., to Pittsburgh in 1817, states that it was impossible for an Englishman to conceive how bad the roads were in places. On the road he met with pieces of rock, great stones, stumps, logs, and whole trees, as well as continual acclivities and declivities.⁴

James Flint made a journey west via Pittsburgh and the Ohio River in 1818. He landed at Portsmouth, Ohio, and made the journey to Limestone (or Maysville), Kentucky, by land, and thence to Lexington. He found the streams in many places unbridged.⁵ The roads in Indiana along the Ohio were merely narrow avenues through the woods in 1820; there were few bridges and those of wood. Traveling from Cincinnati to Lake Erie in 1820, he found fords and crude wooden bridges over streams, while the roads were badly laid out, and stumps and roots remained in the way.

Faux traveled to the western country in 1819 via the new Cumberland Road to Wheeling, and thence over Zane's Trace to Maysville, Kentucky. He crossed the Ohio at the latter place on a large team-

¹Utley, *Michigan as a Province, Territory, and State*, II. 265.

²Birkbeck, *Notes on a Journey in America*, 27.

³See Fearon, *Sketches of America, 1817*, p. 336.

⁴Palmer, *Journal of Travels*, 41.

⁵Flint, *Letters from America*, 94, 104.

boat worked by 8 horses. Thence he went via Washington, Lexington, Frankfort, and Shelbyville to Louisville; thence to Vincennes, Indiana, and to English Prairie, Illinois.¹ About to return from Indiana to Washington, D. C., he wrote:

"Having to commence in the morning a journey of one thousand miles on horseback on my way to England through the Cities of Washington and Charleston and the worst roads and weather in the universe," etc.

Welby, at the same period, describes the roads in Ohio from Wheeling to Maysville as being "altogether in a state of nature; the trees only just chopped off about a foot from the ground, and rocks and stones and gullies left to be got over as we can."² He records that he and his party awaited their turn for above 3 hours at "a very ill-conducted and apparently rather dangerous" ferry over the Ohio from Kentucky into Indiana, 3 miles below Louisville. He describes in detail the dreadful state of the roads from Vincennes via Palmyra to English Prairie. On returning from Vincennes the first week brought them to Louisville, the end of the second week to Maysville, and at the end of the fourth week they reached Washington, Pennsylvania, a distance of 500 miles from Vincennes. He characterizes the roads from Lancaster to Chambersburg, Pennsylvania as "wretched, even dangerous."

Even in New England the roads were subject to the criticism of travelers. Fearon, also traveling in 1817 and 1818, remarked about the badness of the roads.³ That the Pennsylvania Road had not greatly improved at that period is apparent from his description. In difficult parts of the road near McConnellsburg progress was so slow as to be hardly perceptible. Observing the emigrants, he asserted that the getting of these wagons and families over the mountains appeared "little less than a continuance of miracles." After crossing the Juniata, in the latter part of the stage, "nothing could exceed the badness of the roads." He states that he was compelled to walk much of the way over the mountains. According to Fearon's testimony, the merchants of Cincinnati who went to Philadelphia for their goods were 3 months making the trip there and back, while the goods were on the average 50 days arriving. He found the roads so excessively bad that he gave up the plan of going into the interior of Kentucky. At Middletown, Kentucky, he met several travelers who had been two days and nearly two nights coming from Lexington, a distance of about 50 miles.⁴

Ernst, traveling in the West in the summer of 1819, reflects in his descriptions the almost entire absence of artificial modifications in respect to the roads and the crossings of the streams. Nevertheless, as might be expected at that season of the year, he speaks of "fine

¹Faux, *Memorable Days in America*, 187, 203, 268.

²Welby, *A Visit to North America and the English Settlements in Illinois*, 66.

³Fearon, *Sketches of America*, 96.

⁴*Ibid.*, 238.

roads" and of "passable roads."¹ Lorenzo Dow, the Methodist preacher in early Alabama, and Reverend John Owen, who removed his family in 1818 by wagon from near Norfolk, Virginia, to Tuscaloosa, Alabama, give vivid descriptions of the difficulties of the roads in that section of the country. The latter met with privations and difficulties on his journey which it was almost impossible to overcome.² There were many complaints relating to the delivery of mail in the South, due to the defects of the roads.³

The roads between Utica and Syracuse in 1819 were so bad in the summer season that contractors who needed to lay up a supply of tools, provisions, etc., for their employees at interior points purchased them in the winter preceding and sent them onward to their destination in sleighs.⁴ In some sections the roads were so bad that the fact found expression in local terminology and even in names of towns. A New Jersey village enjoyed the suggestive name of "Long-a-coming," while a town in Indiana was in a more realistic way called "Mudholes."⁵

In a report by the Postmaster General on January 27, 1823, the transportation of the public mails between Nashville and New Orleans, "the Emporium of the West," was said to be opposed by many natural obstacles and supported by few artificial facilities and conveniences. A great portion of the intervening country was intersected by bayous, rivers, and streams, which were frequently impassable for the want of bridges, ferries, etc. These the mail carriers were sometimes compelled to swim, with the result that the rider and his horse were sometimes overthrown by the rapidity of the current, with consequent injurious results to the mail. The military road which had been opened at an earlier date had at that time become "somewhat dilapidated," some bridges having been swept away, others being in want of repair, and the road being greatly encumbered by the falling of timber. On account of the bad state of repair into which this road had been allowed to fall, parts of it had been abandoned as a mail-route, and the mail passed southward by other and more circuitous routes.⁶

In a similar report the next year (December 15, 1824) further reference is made to the difficulties of transporting the mail in the same general region. It is stated that some years before a contract had been made to transport mail to New Orleans from Washington via Salisbury, North Carolina, Spartanburg, South Carolina, Athens and Fort Hawkins, Georgia, and Fort Stoddart, Alabama, but that so many obstructions existed that the route was abandoned. Great obstructions also existed on the mail-route from Knoxville, Tennessee,

¹Ernst, *Observations made upon a Journey through the Interior of the United States in 1819*, in Illinois State Historical Library Publication, No. 8, pp. 150, 156, 160, 161.

²Hamilton, *Early Roads of Alabama*, in Alabama Historical Society, *Transactions*, II, 51-54.

³*Ibid.*, 54; cf. especially complaint at Mobile, February 1816.

⁴*Public Documents Relating to the New York Canals*, 312, 352-353.

⁵Hulbert, *Historic Highways*, XI, 50-55, 68-70; see also in general, pp. 15-105.

⁶*American State Papers, Post Office Department*, 111-112.

via Kingston in the same State. and Bennettsville, Cahawba, and St. Stephens, Alabama, to New Orleans. A part of the mail of Alabama and Mississippi and the mail from the South in general to New Orleans was transported over a portion of the great mail-route running from Washington to New Orleans via the capitals of the Southern States, but the obstacles in winter and spring were said to be insurmountable, as there were "neither bridges nor ferries over the numerous streams."¹ Birkbeck wrote from English Prairie (Illinois) under date of December 25, 1817, as follows:

"We receive the Philadelphia daily papers once a week, about a month after they are published; in them we read extracts from the English journals of the month preceding; . . . and what happened three months ago in Europe is just now on the carpet here."²

On the other hand, in spite of the bad roads, surprising expedition was often made in the transportation of passengers, mail, and merchandise. By 1819 the route between New York and Philadelphia had been traveled by the "Citizens' Line" of coaches in 8 hours and 35 minutes, or at the rate of $11\frac{1}{2}$ miles per hour.³ A person could travel by steamboat and stages from Norfolk, Virginia, to Albany, 560 miles, in 75 hours.³ About the same time a contract was made, securing "great dispatch of the mails," by which they were to be transmitted to Baltimore in 10 or 11 days from New Orleans, and the return mail in the same period.³ As an illustration of expedition in the transmission of mail, it was said that the President's message, December 1819, was carried from Washington to New York in less than 18 hours, a distance of 230 miles.

In spite of all the great amount of evidence cited above, tending in general to establish the continued bad character of the roads throughout the period, it nevertheless appears that on the whole the roads had greatly improved in the older portions of the country, while communications with the western country were much better, even though much still remained to be desired.

The earlier turnpikes in the country were built about the time of the adoption of the Federal Constitution,⁴ though the Philadelphia and Lancaster Turnpike, completed in 1794, was the first important road of the kind. The financial success of the company which constructed this road led to a general movement toward the conception of similar roads in other of the older portions of the country, which was well under way by 1800. It is true that not all of these roads were justified by the conditions and demands of transportation, and not a few of them were afterwards allowed to fall into decay.

¹*American State Papers, Post Office Department*, 119-120.

²Birkbeck, *Letters from Illinois*, 45.

³*Niles' Register*, XVI, 176, May 1; 271, June 12; 298, June 26, 1819.

⁴Earle, *Stage Coach and Tavern Days*, 232.

President Dwight, of Yale, had called the Catskill Turnpike well-made in 1804, while he found it "generally bad and long neglected" in 1815.¹ Clinton in 1810 characterized the Mohawk and Schenectady Turnpike as "inexcusably bad," inasmuch as there were great quantities of gravel and stone near at hand.² So bad was the same turnpike near Little Falls that two toll-gates had been thrown open. Yet, in spite of neglect and in spite of public hostility to toll-roads, it is evident that the turnpike movement resulted in a very general and decided betterment of the roads. The public roads of Connecticut, as well as the turnpikes, were in 1819 said to be numerous and generally well made. The roads in Rhode Island were said to have been greatly improved within the preceding 30 years, while there were a number of good turnpikes.³ There were good turnpike roads in various directions from Philadelphia,⁴ and a large number in New York and other States.

Certainly the means of overland transportation improved greatly during the period prior to 1820. There were many exceptions to this general statement, but it must be remembered that it was a period of expansion, and that a great extent of new country was opened up with almost unparalleled rapidity. It is not surprising that in these new regions the roads did keep pace with the expansion of population. It is to be noted, moreover, that it was the western country that foreign travelers were most interested in. It was that section that they visited, passing over the unformed or imperfectly formed roads, and it was largely upon the basis of their experiences in that region that their verdicts upon our roads were formed.

¹Hulbert, *Historic Highways*, XII, 150-158.

²Campbell, *Life and Writings of DeWitt Clinton*, 196.

³Pease and Niles, *Gazetteer of Connecticut and Rhode Island*, 9.

⁴Carey and Lea, *Geography, History, and Statistics of America*, 166.

CHAPTER II.

TOLLS AND TRANSPORTATION COSTS ON EARLY ROADS AND CANALS.

Unorganized character of transportation business, 65. Ferries and bridges, 66. Turnpike and canal tolls, 68. Canals and waterways, 70. Transportation of passengers by land, 73. Transportation of commodities by land, 77. Transportation in New York, 82. Transportation into the Western country, 86. Commercial and industrial consequences of transportation costs, 88. The transportation of military supplies, 90.

UNORGANIZED CHARACTER OF TRANSPORTATION BUSINESS.

Transportation costs and charges in the Colonies, and later in the States, during the eighteenth century, save over a few well-settled routes, can not be very accurately measured, or expressed in present-day units of cost and charge, even in cases where the records available are fairly complete. Over any given route charges varied with the varying condition of the road, with the danger of Indian attack, with the recurrence of spring freshets, and even with the weather. To a considerable extent it is true that each separate traveler or shipper made his own bargain for specific services required, and that specific charges were not in general regulated by an established system of rates.¹ As a business, transportation was unorganized and usually discontinuous. Charges, therefore, present themselves as a discrete series of items, as carriage-tolls, either on a canal or turnpike, tolls for portage or lockage, on a passage by an otherwise navigable stream. The statistics of costs which such a custom made necessary were evidently used as a basis for early regulations regarding rates, where separate provision for tolls and carriage were made.²

During the colonial period the economic policy of the British Government tended rather to inhibit than to further the organization of transportation in the Colonies as a business. By this policy the transportation of domestic manufactures was discouraged early in the eighteenth century, in order to discourage production, and later stringent prohibitions were laid upon colonial commerce. Carriage of most articles of colonial manufacture, even for short distances, was forbidden. These restrictions were serious handicaps upon the carrying trade. Passenger travel was largely upon horseback or by private conveyances, and provided only a limited demand for public service.

¹A letter from Thomas Green, dated Louisville, Falls of the Ohio, Dec. 23, 1786, "To the Honorable the Governor, the Council and Legislature of the State of Georgia," in reference to the proposed uprising in the West against the Spaniards on account of non-permission of navigation of the Mississippi, illustrates the high cost of travel under the conditions of that time. "The amazing bad travelling at this season of the year, from the streams being high and the roads bad, and the danger of the savages so great that I could not prevail with a trusty person to undertake the journey under sixty pounds, which you will please pay the bearer, Mr. Wells, whom I have prevailed upon through his zeal for the cause." In *Secret Journals of Congress*, IV, 318.

²Cf. chap. xv, Baltimore and Ohio Railroad.

The statistics contained in the following pages will serve to give a fair estimate of the charges for transportation at the end of the eighteenth century and the beginning of the nineteenth. The chief divisions under which they are found are ferriage; bridge, canal, and turnpike tolls; and rates for passengers and merchandise by road or water. No transfer or portage charges seem to be included, although they must have existed at various points, as at Louisville, where the necessity for transportation around the Falls of the Ohio was the principal factor in the demand for internal improvements.

FERRIES AND BRIDGES.

Ferries were established at an early date in the colony of Massachusetts Bay,¹ and the charges appear to have been subject to regulation from the very first. The Court of Assistants, meeting in Boston November 9, 1630, two months after the founding of the colony, ordered that whoever should desire to set up a ferry between Boston and Charlestown, and should so signify by giving his name to the governor, should have one penny for every person he carried across, and the like sum for every hundredweight of goods.² In the spring of the next year, May 1631, it is recorded that one Thomas Williams desired to set up a ferry between Winnetsetmet and Charlestown and he was permitted to charge 3*d.* a person and from Winnetsetmet to Boston 4*d.* a person. The ferry between Boston and Charlestown seems to have been established only after a further argument as to fares, for in June 1631 we find record that Edward Converse had undertaken to set up a ferry and was to receive 2*d.* a person, unless there were two or more, in which case he could charge but a penny apiece. In November 1637 the Court of Assistants seemed to think that Mr. Converse should pay for his privilege at the rate of £40 per year, and he was still further subject to regulation in 1638, when, apparently because of some accident, he was enjoined to give better service by keeping two boats, with two men each, to be kept on either side, except when the wind was so strong that four men were needed to man one boat, in which case the other might be left idle. A little later in the same summer a man was given liberty to set up a ferry over the Neponset River, and to charge 1*d.* a person, and a year later one at the same rate was established between Weymouth and Mount Wollaston.

Other references in the early years of the Colony show that 1*d.* a person was the usual charge permitted, except the Winnetsetmet Ferry, which seems to have also been engaged in carrying from Boston to ships lying in the harbor, and which was permitted to charge 3*d.* per person. In 1641 the Court of Assistants passed an order permitting ferrymen to charge double the usual rate for trips made after daylight.

¹See chap. i.

²Massachusetts Bay, *Records of the Governor and Company*, I, 81.

Between North Point, Salem Neck, and Cape Ann or Bass Riverside, now Beverley, there was a ferry in 1636. It provided at first for foot-passengers only, but in 1639 the lease under which it was operated contained the following regulations:

“Lessee to keep a horse-boat, to have for strangers’ passage 2*d.* apiece, for town dwellers, 1*d.* apiece, for mares, horses, and other great beasts, 6*d.* apiece, for goats, calves, and swyne, 2*d.* apiece.”¹

Such special provision for various classes are frequent. In general magistrates were to be carried free, and also other officers of the Colony, though it is usually specified that the exemption does not extend to their families.²

Ferries in Plymouth do not seem to have been so early a subject of legislation. March 2, 1636, one Joseph Rogers was “allowed a constant ferry over Joanes River, near his dwelling house, and to have 1*d.* per person, he to keep a sufficient ferry at that price.”³ Two years later, April 2, 1638, the freemen of Scituate erected a ferry over the North River, at a rate of 1*d.* for persons; horse and every beast, 4*d.* They also apparently hired a man to run it, and made passages through the marsh to the ferry, an item which seems to have been of considerable importance in the case of many ferries. The price arrangement for the Joanes River ferry does not seem to have been satisfactory, for in July 1638 another man is granted the ferry, with 25 acres of land as an inducement. In November a third man is employed, with the fare changed to 2*d.*, and the promise made that if there is a bridge erected he will be repaid for any labor he has been put to in building approaches to the ferry. These rates seem to have been in force till the latter part of the seventeenth century, when they gradually increased.

In 1710, or 20 years after the establishment of the province, there was passed an act to regulate ferries.⁴ The rate of fare was fixed by this act at 1*s.* for one person crossing and 2*s.* for more than one, the amount to be divided among the passengers equally.

In New York ferries seem to have been private affairs, with only so much regulation by the colony as served to prevent the inns which usually existed at them from becoming disorderly. In Virginia ferries were established and paid for by the parishes concerned. No rates are to be found in the earlier laws. Like other rates for transportation, there seems to have been but slow change and little or no attempt at standardization until the end of the colonial period and the westward migrations, when the volume of traffic brought new conditions. Of these, even records are few and scattering. Gallatin’s report on

¹Rantoul, *Notes on Old Modes of Travel*, 34.

²Cf. Massachusetts Bay, *Records of the Governor and Company*, II, 32.

³Plymouth, *Records of the Colony*, I, 39.

⁴Massachusetts Bay, *Acts and Resolves*, I, 651.

internal improvements (table 8) gives the rates in force on the Catawba River in 1788, and still in force in 1808:¹

TABLE 8.

For every man and horse.....	4d.	For every two-wheeled carriage.....	2-4d.
" " foot passenger.....	2d.	" " head of cattle ferried or swum	3d.
" " wagon and team.....	3-6d.	" " head of sheep, hogs or goats..	2d.
" " rolling hogshead.....	1-6d.		

“It is further stipulated that the said company shall during the said term, keep good and sufficient boats for transporting passengers, their servants, carriages and horses, and all cattle, sheep, hogs, goats and rolling hogsheads, as well by night as by day.”

Travelers over Zane’s Trace paid the ferry tolls shown in table 9 at the Scioto and Ohio Rivers.²

TABLE 9.

	Scioto.	Ohio.
	<i>cents.</i>	<i>cents.</i>
Man and horse.....	12.5	18.5
Man alone.....	6.5	9.25
Wagon and team.....	75	\$1.15
Horned cattle.....	6.25	9.25

The difference in fare may be due to the differences in the width of the rivers. Across the Niagara River in 1800 the ferriage was \$1.³

Bridges were in most cases erected by the towns or parishes concerned, and while a large number were authorized to collect toll the rates have not been kept, save in a few cases. They seem to have ranged from 2 cents for foot-passengers, 15 cents for carriages drawn by 1 horse, 15 cents for 2 horses, and 25 cents for 4 horses, up to \$1 per carriage. There seems to have been great variation.

TURNPIKE TOLLS.

The rates of toll charged on various turnpikes, canals, river improvements, etc., in general form but a small part of the total cost of transportation over the various routes, but a few statistics are at least of interest. The Philadelphia and Lancaster Turnpike, by its act of incorporation of April 19, 1792, was to collect the following tolls for every space of 10 miles:⁴

For every score of sheep 1/8 dollar; for every score of hogs, 1/8 dollar; for every score of cattle, 1/4 dollar, for every horse and his rider, or led horse, 1/16 dollar; for every sulky, chair, or chaise, with one horse and two wheels, 1/8 dollar; for every chariot, coach, stage, wagon, phaeton, or chaise with two horses and four wheels, 1/4 dollar; for either of the carriages last mentioned, with four horses, 3/8 of a dollar; for every other carriage of pleasure under whatever name it may go, the like sums according to the number of wheels and horses drawing the same; for every cart or

¹American State Papers, Miscellaneous, I, 793.
²Hulbert, *Historic Highways*, XI, 164.
³Maude, *Visit to the Falls of Niagara in 1800*, p. 307.
⁴American State Papers, Miscellaneous, I, 896.

wagon whose wheels do not exceed the breadth of four inches, 1/8 dollar for each horse drawing the same; for every cart or wagon whose wheels shall exceed in breadth 4 inches and not exceed 7 inches, 1/16 of a dollar for every horse drawing the same; for every cart or wagon the breadth of whose wheels shall be more than 7 inches and not more than 10 inches, or being the breadth of 7 inches, shall roll more than 10 inches, 5 cents for every horse drawing the same; for every cart or wagon the breadth of whose wheels shall be more than 10 inches, and not exceed 12 inches, or being 10 inches, shall roll more than 15 inches, 3 cents for every horse drawing the same; for every cart or wagon the breadth of whose wheels shall be more than 12 inches, 2 cents for every horse drawing the same.

TABLE 10.—Tolls on the Schenectady and Utica Turnpike (68 miles).¹

(Per 10 miles.)					
	Cents.		Cents.		Cents.
Sheep, per score.....	8	Phaetons.....	25	2-ox cart.....	6
Hogs, per score.....	8	1-horse stage.....	9	3-ox cart.....	8
Cattle, per score.....	18	2-horse stage.....	12.5	4-ox cart.....	10
Horses, per score....	18	3-horse stage.....	15.5	6-ox cart.....	14
Mules, per score.....	18	4-horse stage.....	18.5	1-horse sleigh.....	6
Horse and rider.....	5	4 tires under 6 inches.	75	2 horse or ox sleigh...	6
Tied horses, each....	5	5-horse wagons, tires		3-horse or ox sleigh...	8
Sulkies.....	12.5	under 6 inches.....	87.5	4-horse or ox sleigh...	10
Chairs.....	12.5	6-horse wagons, tires		5-horse or ox sleigh...	12
Chariots.....	25	under 6 inches.....	\$1.00	6-horse or ox sleigh...	14
Coaches.....	25	1-horse cart.....	6		

According to the above table, the cost to a horse and rider over the whole distance from Schenectady to Utica would be about 34 cents, approximately half a cent per mile. A private coach, on the other hand, would be charged nearly \$3. A stage would pay from about 60 cents to \$1.25, and animals in sums from 50 cents to \$1.25 per score. The practice shown of charging more for narrow-wheeled vehicles was very common. In some cases wagons with tires narrower than a certain width were forbidden during the winter and spring seasons, or were forbidden to carry above a certain amount.

On the Seneca Turnpike, the old Genesee Road, over which an enormous amount of westward travel passed, the fares were about the same. A rate of 6 cents per score for cattle is the only radical difference.²

A Connecticut turnpike, quoted by Gallatin as an average, had toll-gates every 2 miles, with the schedule of charges shown in table 11. It will be noticed that a distinction is made between empty and loaded vehicles, and that cattle are apparently rated by the head and not by the score, though a comparison with rates on the New Jersey Turnpike (table 12) makes it uncertain whether this was a rate per animal or for a group.³

TABLE 11.

	Cents.		Cents.
4-wheeled pleasure carriage.....	25	Sleighs, pleasure or loaded, empty.....	3
Chaise or sulky.....	12.5	Man and horse.....	4
Loaded cart or sled.....	8	Mail stage.....	6.25
Empty cart or sled.....	6.25	Every other stage.....	25
Loaded wagon.....	12.5	Single horse cart, loaded.....	6.25
Empty wagon.....	6.25	Single horse cart, empty.....	4
Horses, cattle and mules (each).....	1	Sheep and hogs.....	.5
Sleighs, pleasure or loaded.....	6.25		

¹Earle, *Stage Coach and Tavern Days*, 237–238.

²Hulbert, *Historic Highways*, XII, 111.

³*American State Papers, Miscellaneous*, I, 873.

The turnpike in New Jersey above mentioned ran from New Brunswick to Easton on the Delaware, and the rates of toll for each mile are given in table 12.¹

TABLE 12.

	Cents.		Cents.
Carriage, sleigh or sled drawn by one beast.	1	Horse and rider or led horse or mule....	.5
Each additional beast.....	1	Per dozen calves, sheep, or hogs.....	.5
Each additional beast exceeding four.	2	Per dozen horses, mules, or cattle.....	2

Two Pennsylvania turnpikes resemble in their charges and classifications (table 13) more nearly those on the Genesee Road above referred to. Toll-gates were 5 miles apart on the Susquehanna and Lehigh and the Susquehanna and Tioga.²

TABLE 13.

	Cents.		Cents.
Score of sheep.....	4	Vehicle with 2 wheels and 1 horse.....	6
Score of hogs.....	6	Vehicle with 2 wheels and 2 horses.....	9
Score of cattle.....	12	Vehicle with 4 wheels and 2 horses.....	12
Horse or mule and rider.....	3	Vehicle with 4 wheels and 4 horses.....	20

Table 14 shows the rates per 5 miles on the Germantown and Perkiomen Turnpike.³

TABLE 14.

	Cents.		Cents.
Score of sheep or hogs.....	6	Stage wagon with 2 horses.....	12
Score of cattle.....	12	Stage wagon with 4 horses.....	20
Horse and rider or led horse.....	3	Sleigh, for each horse drawing same.....	3
Sulky, chair, or chaise, with 1 horse and 2 wheels.....	6	Sled, for each horse drawing same.....	2
and with 2 horses.....	9	Cart or wagon whose wheels do not exceed 4 to 7 inches, for every horse.....	3
Chariot, coach, phaeton, or chaise with 2 horses and 4 wheels.....	12	Cart or wagon whose wheels do not exceed 10 to 12 inches, for every horse.....	1
Either of the carriages last mentioned, with 4 horses.....	20	Cart or wagon whose wheels shall not exceed 12 inches, for every horse.....	1
Other carriage of pleasure, whatever name, the like sums according to number of wheels and horses.			

Maryland, on January 2, 1805, passed an act incorporating several turnpike companies in Baltimore County, and in this act the sums which might be charged for tolls, over the space of 10 miles, were carefully stated. For every score of sheep or hogs, 12½ cents; for every score of cattle, 25 cents; for every horse and his rider or led horse, 6¼ cents; for every chair or chaise with one horse and two wheels, 12½ cents, and so on with increasing charges up to those having four horses, at 37½ cents.⁴ This act also regulated the width of tires.

CANALS AND OTHER WATERWAYS.

The difference between the basis of tolls on the turnpike, upon the type of vehicle, and that of the canals, upon the commodities themselves, appears in tables 15 and 16.

¹*American State Papers, Miscellaneous*, I, 881-882.²*Ibid.*, 892.³*Ibid.*, 887.⁴*Ibid.*, 901.

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TABLE 15.—Schedule of tolls on the James River Improvement¹.

	Parts of a dollar.
Every pipe or hogshead of wine containing more than 65 gallons.....	45/72
Every hogshead of rum or other spirits.....	36/72
Every hogshead of tobacco.....	30/72
Every cask between 65 and 35 gallons, half of a pipe or hogshead, barrels one-fourth part, and smaller casks or kegs in proportion, according to the quality and quantity of their contents of wine or spirits.	
For casks of linseed oil, the same as spirits.	
Every bushel of wheat, peas, beans, or flaxseed.....	5/288
Every bushel of Indian corn, or other grain, or salt.....	2 1/2-288
Every barrel of pork.....	15/72
Every barrel of beef.....	10/72
Every barrel of flour.....	30/288
Every ton of hemp, flax, potash, bar or man iron.....	\$1 3/72
Every ton of pig iron or castings.....	25/72
Every ton of copper, lead, or other ore, other than iron ore.....	60/72
Every ton of stone or iron ore.....	12/72
Every hundred bushels of lime.....	38/72
Every chaldron of coals.....	12/72
Every hundred pipe staves.....	6/72
Every hundred hogshead staves or pipe or hogshead heading.....	15/288
Every hundred barrel staves or barrel heading.....	10/288
Every hundred cubic feet of plank or scantling.....	25/72
Every hundred cubic feet of other timber.....	55/288
Every gross hundredweight of all other commodities or packages.....	15/288
Every boat or vessel which has not commodities on board to yield so much, provided that an empty boat or vessel returning, whose load has already paid at the respective places, the sums fixed each, shall repass toll free.....	\$1 3/72
For flats, exceeding 8 1/2 and not exceeding 9 1/2 and having more than 70 bales of cotton...	\$35.00
For flats, exceeding 8 1/2 and not exceeding 9 1/2, having paid the tolls of \$30 or \$35 down, shall be passed back if returning within 30 days, for.....	20.00

TABLE 16.—Schedule of tolls on the Potomac River, 1798 and 1808.

	1798.	1808.
	Cents.	Cents.
For every pipe or hogshead of wine containing more than 65 gallons.....	66	67
For every hogshead of rum or other spirits.....	55	56
For every hogshead of tobacco.....	44	45
For every cask between 65 and 35 gallons, one-half of a pipe or hogshead; barrels one-fourth part, and smaller casks or kegs in proportion, according to the quality and quantity of their contents of wine or spirits.		
For casks of linseed oil, the same as spirits.		
For every bushel of wheat, peas, beans, or flaxseed.....	2	2
For every bushel of corn or other grain or salt.....	1	1
For every barrel of pork.....	22	23
For every barrel of beef.....	15	15
For every barrel of flour.....	11	11
For every ton of hemp, flax, potash, bar or manufactured iron.....	\$1.10	\$1.12
For every ton of pig iron or castings.....	40	38
For every ton of copper, lead, or other ore, other than iron ore.....	90	89
For every ton of stone or iron ore.....	20	19
For every 100 bushels of lime.....	55	56
For every chaldron of coals.....	20	19
For every hundred of pipe staves.....	9	9
For every hundred of hogshead staves or pipe or hogshead heading.....	6	6
For every hundred of barrel staves or barrel heading.....	4	4
For every hundred cubic feet of plank or scantling.....	40	38
For every hundred cubic feet of other timber.....	22	21
For every gross hundred weight of all other commodities and packages...	6	6
For every empty boat or vessel which has not commodities on board to yield so much, except an empty boat or vessel returning, whose load has already paid, at the aforesaid place, the sum fixed, in which case she is to pass toll free.....	\$1.10	\$1.12

¹American State Papers, Miscellaneous, I, 800.

Two schedules are to be found in Gallatin's Report of the tolls on the Potomac River in 1798 and 1808. The schedule of 1798 is given in table 16, with comparative figures for 1808.¹ There is no marked change in the decade, the increases shown being slight.

A table of tolls on the Susquehanna Canal is almost identical in its charges on both commodities and empty boats.² The Delaware and Schuylkill Canal and River Navigation Company did not have any fixed schedule of tolls, but the charter set a maximum charge of \$0.072 per mile for every ton burden on a boat or other vessel, and the same for every 100 feet cubic measure of timber or 1,200 feet board measure of boards, plank, or scantling.³ On the Susquehanna and Schuylkill Canal the tolls were not to equal \$1 for every ton burden and every 100 feet board measure of lumber. For shorter distances than the whole length of the canal a proportional charge was made.⁴

On the James River Canal the traffic was almost wholly in tobacco, and the tariff was a flat rate of 2*s.* 6*d.* a hogshead, without respect to distance. Before the existence of the canal the general charge for transportation was 9*s.* to 12*s.* in winter, and seldom less than 7*s.* 6*d.* per hogshead for the wagonage alone from Westham, a short distance above the locks. Of the Santee and Cooper Canal it was said that the expenses of water-carriage down the rivers and through the canal were generally about one-half the cost of conveyance of the same articles by land from the place of growth to Charleston. There was also a great saving in time and convenience.⁵

On canals and rivers in New York the tolls appear to have been based on both distance and tonnage. The act chartering the Western Inland Lock Navigation Company and the Northern Inland Lock Navigation Company, for example, required that the amount of the tolls accruing to the former wherever the navigation might be between the navigable waters of the Hudson River and Seneca Lake and Lake Ontario should not exceed \$25 for every ton of the burden of such boat or vessel, and so in proportion for every 100 feet, cubic measure, of timber, and every 1,000 feet, board measure, of boards, plank, or scantling, and so in proportion for any smaller distance and less number of locks in any interval between the said river and lake; to the latter a maximum of \$20 was allowed under similar conditions between the navigable waters of the Hudson River and Lake Champlain. In both cases all boats of a burden less than a ton and using either of the canals were required to pay the toll of a ton.⁶

Maude stated in 1800 that the lock dues at the canal at Rome (Fort Stanwix), New York, were from \$2 to \$4, according to the load. Although the river as improved afforded a passage at much less expense

¹*American State Papers, Miscellaneous*, I, 813-818.

²*Ibid.*, 821.

³*Ibid.*, 850.

⁴*Ibid.*, 846.

⁵*Ibid.*, 790.

⁶*Ibid.*, 785.

and trouble than attended the portage, the boatmen were dissatisfied. Maude was, however, informed by Captain Williamson that these lock dues were far from being so moderate as appeared, and that every bushel of wheat paid 10 cents and of salt 12½ cents, while a barrel of flour paid 50 cents.¹ It was stated in 1818 that the rate of toll that had been charged on the 100 miles of lock navigation opened by the Western Inland Lock Navigation Company was \$5.20 per ton. The mistaken opinion was, however, expressed that this rate had never been a matter of complaint.²

The minimum charges on the Erie Canal, so far as completed, in 1820, were as follows: Flour, meal, and all kinds of grain, salted provisions, and pot and pearl ashes were put at 1 cent per mile for a gross ton. Merchandise was put at 2 cents per ton per mile. The sum collected on the middle section of the canal from July 1, 1820, to the close of navigation was \$5,244.34.³

The act approved by the Kentucky legislature, December 20, 1805, amending the act incorporating the Ohio Canal Company, allowed the taking of 12 cents per ton for each ship or other sea-vessel above 100 and not exceeding 400 tons burden, and a lump sum of \$11.75 for each ship or other sea-vessel about 90 and not exceeding 100 tons. Sums proportionally smaller were charged for smaller ships or vessels. For each barge, batteau, pirogue, or canoe, not more than 35 feet long, \$2 might be taken. The toll increased with the length of this class of vessel, until those not more than 60 feet long paid \$4, while 9 cents additional for every foot over 6 feet long was allowed. For each 100 of pipe or hogshead staves, or pipe or hogshead if floated on a raft, 4 cents was allowed. The same toll was allowed on each 100 feet of plank or scantling if floated on a raft, and for each 100 feet of other timber floated on a raft 9 cents was allowed.⁴

TRANSPORTATION OF PASSENGERS.

In the early days, as at the present time, cost of travel necessarily covered charges for transportation and incidental expenses. These latter were sometimes included in a general rate, and were apparently often quoted as definitely foreseen and included factors. The man who rode on his own horse, or in his own coach or carriage, estimated these expenses at tolls and the cost of food and shelter for himself and his horse. If he went by a public conveyance, a single rate covered tolls and service, and occasionally food and lodging also, when the distance traveled was too great to be covered in a day; baggage allowances were small. But towards the end of the eighteenth century there

¹Maude, *Visit to the Falls of Niagara in 1800*, p. 35.

²Haines, *Considerations on the Great Western Canal*, 28-29.

³*Hunt's Merchant's Magazine*, XXIII, 390, Oct. 1850.

⁴*American State Papers, Miscellaneous*, I, 825.

appears a better organization of the business, and quotations may be found between the principal cities and into the West. One enterprising gentleman seems to have arranged a through line of stages from Portsmouth, New Hampshire, to Savannah, Georgia, and all intervening and connecting points, at 3*d.* per mile, with a baggage allowance of 14 pounds. The previous average rate for such a journey was 4*d.* per mile. Way passengers were carried at the same rate if the stages were not full.¹

In 1793 the fare from Boston to Providence by daily stage was \$1. A little earlier, the trip from Boston to Hartford cost \$10. When passenger steamers were put on between Providence and New York, the stage-line became more important than ever. The time consumed was reduced to 4 hours and 50 minutes, and the fare was raised to \$3. This brought competition in the shape of a new line that charged a fare of \$2.50. The old line met the reduction and its action was followed by the new with another cut, and a "rate war" ensued, until the old line announced that it would carry the passengers first booked gratis. The new line thereupon advertised that it would carry passengers free of expense and furnish a dinner at the end of the journey. The offer was duplicated by the old line, with the addition of a bottle of wine. Such a situation of course could continue but a short time, and the rival lines soon came to an understanding by way of a contract to charge \$2 a trip thereafter.

From Albany to New York the fare was (1797) \$7, and from New York to Bennington, Vermont, the rate was 5 cents per mile.

From New York to Philadelphia,² a distance of 96 miles, the fare was \$6, and from Philadelphia to Baltimore,³ 98 miles, \$6. The ordinary charge for meals was 50 cents for breakfast and supper, and \$1 for dinner, exclusive of wine; 25 cents was charged for a bed. Between Baltimore and Georgetown, 45 miles, the fare was \$4. About the same time the expense of coming by water from New London, Connecticut, to Alexandria, Virginia, nearly 300 miles, was \$6 for each passenger.

On the roads to the West the charges for incidental expenses were lower, probably owing to the poorer accommodations provided. West of the Alleghenies 2*s.* or 2*s.* 6*d.* was the price of dinner or supper, and 18*d.* for breakfast.⁴ The fare from Georgetown to Frederick was \$3 in 1799, and from Frederick to Lancaster, Pennsylvania, \$4.50. In 1803 the fare from Hagerstown to Frederick was \$2, and from Frederick to Baltimore, \$3.50.

Adams states that the usual rate in the North at the beginning of the nineteenth century was 6 cents per mile.⁵ Michaux,² who traveled

¹Earle, *Stage Coach and Tavern Days*, 279.

²Michaux, *Travels to the Westward of the Allegany Mountains*, 24.

³Hulbert, *Historic Highways*, XI, 112, quoting Francis Bailey.

⁴One shilling was equivalent to 22½ cents.

⁵Adams, *History of the United States*, I, 14.

extensively in the States in 1802, quotes the fare from New York to Philadelphia at 5 piasters, and the charges for meals 1 piaster for dinner and one-half piaster for breakfast and supper and bed. At 96 miles this would make the rate a small fraction above 5 cents per mile.¹ The time taken varied from a day to a day and a half.

In 1795 the stage from Whitestown to Canajoharie, New York, charged a fare of \$2 for regular through passengers, and 4*d.* a mile for way passengers. In 1800 Maude paid \$3.12½ on the stage between Albany and Canajoharie, and \$9 from Albany to Skeensborough, 72 miles. Passage across Lake Champlain cost \$2.50 and from Albany to Utica the stage fare was \$5.62½.²

Statistics for the period just preceding the railroads are very meager and scattering. A few are given rather by way of examples, for a coherent account is hard to find. The fare from Philadelphia to Pittsburgh in 1812 was \$20 by stage, with way expenses of \$7. The distance was 297 miles and required 6 days.³ In 1817 there seems evidence of a rise in the cost of transportation. The fare from Boston to Albany was £2 14*s.* for a distance of 180 miles. Meals and bed were uniformly 2*s.* 3*d.* each.⁴ This makes an average of about 9 cents per mile. The fare from New York City to New London, Connecticut, was \$7, being 5 cents per mile for a distance of 140 miles. This included meals, and was probably a rate made to meet steamboat competition.⁵

The fare by stage from Boston to Salem at this time was \$1.25, but was reduced in 1821 to \$1.⁶ The mail coach that ran three times a week from Salem to Haverhill via Andover charged a fare of \$1. From Boston to Burlington, Vermont, 200 miles, the fare was only \$11.

There are a few statistics of the cost of travel into the western country and through the South. Fearon in 1817 paid \$18 from Chambersburg, Pennsylvania, to Pittsburgh, a rate of 10 cents per mile for the 180 miles.⁷ Palmer in the same year paid at the same rate for a trip by stage from Washington to Pittsburgh, \$23 for 230 miles.⁸ Another traveler, Morris Birkbeck, with a party of 9 persons, traveled from Richmond to Fredericksburg, 69 miles, in two hacks or light coaches, at a cost of \$70 for carriage and \$33 for way expenses. Traveling expenses by horseback were, according to this authority, very regular, amounting to about \$1 per day for man and horse, as follows:⁹ breakfast and feed for horse, 37½ cents; feed for horse at noon, 12½ cents; supper and lodging for both, 50 cents.

¹Piaster or Spanish dollar varied with the price of silver from 3*s.* to 4*s.* 6*d.* Therefore the piaster was equal to \$1. See Tate's *Modern Cambist* (23d ed.), 93.

²Maude, *Visit to the Falls of Niagara in 1800*, pp. 307-308.

³Earle, *Stage Coach and Tavern Days*, 270.

⁴Fearon, *Sketches of America*, 122. ⁵*Ibid.*, 90. ⁶*Ibid.*, 84, 90. ⁷*Ibid.*, 184.

⁸Palmer, *Journal of Travels*, 37.

⁹Birkbeck, *Notes on a Journey in America*, 27.

He estimated the cost of migrating over the mountains from Philadelphia or Baltimore to Pittsburgh, down the Ohio to Shawneetown, and thence to English Prairie, Illinois, at 5 pounds sterling per head.¹

The expenses of traveling in the Southern States were much less standardized, and probably much higher. Faux quotes the fare from Charleston via the Columbia Mail, for 70 miles, at a cost of \$15.²

Statistics of water transportation of passengers before the era of steamboats are for the most part lacking. Maude in 1800 paid \$2 for passage-money and \$4.50 for "board and liquors" on board a sloop from New York to Albany, and a like sum for his servant, the trip occupying 4 days.³

With the advent of the steamboat, transportation by water received a great impetus. The fares on Hudson River steamboats in 1813, together with the stops made, were as shown in table 17.⁴

TABLE 17.

From New York to—		From Albany to—	
Ver Plank's Point.....	\$2.00	Kinderhook.....	\$1.50
West Point.....	2.50	Coxsackie.....	2.00
Newburg.....	3.00	Hudson.....	2.00
Wappinger's Creek.....	3.25	Catskill.....	2.25
Poughkeepsie.....	3.50	Redhook.....	2.75
Hyde Park.....	4.00	Esopus.....	3.00
Esopus.....	4.25	Hyde Park.....	3.25
Redhook.....	4.50	Poughkeepsie.....	3.50
Catskill.....	5.00	Wappinger's Creek.....	4.00
Hudson.....	5.00	Newburg.....	4.25
Coxsackie.....	5.50	West Point.....	4.75
Kinderhook.....	5.75	Ver Plank's Point.....	5.25
Albany.....	7.00	New York.....	7.00

A few steamboat fares are cited by travelers. Fearon, in 1817, paid \$3.50 for a passage from New York City to Newburgh, 60 miles, and \$7 from New York to New London, Connecticut, 140 miles.⁵ Palmer paid \$5 for a passage via packet and steamboat from New York to Philadelphia, and \$7 from New York to Albany, the latter including board. On the chartered steamers an extra \$1 was charged for the benefit of the State, and to be used towards forwarding the Great Western Canal.⁶ From New York to Charleston the fare was \$25.

¹Birkbeck, *Letters from Illinois*, 97.

²Faux, *Memorable Days in America*, 50, 343.

³Maude, *Visit to the Falls of Niagara in 1800*, p. 19.

⁴*Hunt's Merchant's Magazine*, XXV, 243, Aug. 1851. Other regulations were as follows:

"All the other way passengers pay at the rate of \$1 for every 20 miles. No one taken on board and put on shore, however short the distance, for less than \$1. Young persons, from 2 to 10 years of age, to pay one-half price; children under 2 years, one-fourth price. Servants who use a berth, two-thirds price, but half price if none. Every person entering a name on the book for passage shall pay at the time of so doing, otherwise the berth will not be considered as engaged; any person who having paid, and afterwards declines to go, shall be entitled to a passage in the same boat at any future period, but not to have the money refunded.

"\$1 to be paid for each dog or animal not exceeding the size of a sheep; they are to be tied on deck forward of the foremast.

"Every person paying full price is allowed 60 pounds of baggage; if less than whole price 40 pounds; all surplus baggage to be paid for."

⁵Fearon, *Sketches of America*, 75, 90.

⁶Palmer, *Journal of Travels*, 7, 56, 207, 247.

The table of fares on the Mississippi (table 18) is confirmed by the accounts of Birkbeck, Faux, and Fearon, in their accounts of travels in the New World.¹

TABLE 18.

<i>Up.</i>		<i>Down.</i>	
From New Orleans to—		From Falls of Ohio to—	
Natchez, 315 miles.....	\$30.00	Henderson.....	\$10.00
Warrenton, 413 miles.....	35.00	Shawneetown.....	12.50
Settlement at mouth of St. Francis		Mouth of the Cumberland.....	15.00
River, 354 miles.....	35.00	Mouth of the Ohio.....	20.00
Fort Pickering, at the Chickasaw		New Madrid.....	22.50
Bluff, 906 miles.....	80.00	Little Prairie.....	25.00
Little Prairie, 1,045 miles.....	85.00	Chickasaw Bluff.....	30.00
New Madrid, 1,078 miles.....	90.00	Mouth of St. Francis River.....	35.00
Mouth of the Ohio, 1,140 miles...	95.00	Warrenton.....	50.00
Mouth of the Cumberland, 1,215		Natchez.....	60.00
miles.....	100.00	New Orleans.....	75.00
Shawneetown, 1,310 miles.....	105.00		
Henderson, 1,375 miles.....	110.00		
Falls of Ohio, 1,600 miles.....	125.00		

Children, 2 to 10 years old, half price; under 2 years, one-fourth price. Servants, half price. Way passengers, 12½ cents per mile. Down: Same proportional reduction. Way passengers same down as up.²

THE TRANSPORTATION OF COMMODITIES BY LAND.

Of definite information as to the cost of carriage of commodities by land, there is little pertaining to the period. While prior to 1800 the British Government discouraged colonial manufacture, the trade in farm produce was apparently chiefly local. Other products were subject to artificial restrictions, often passing from one colony to another by way of Barbadoes or London. About the only articles which were freely carried were military and naval supplies and stores, whose production had always been encouraged by the English. A report from the Braddock campaign shows that Franklin undertook a little speculation when he contracted to supply the army with the means of transportation. He advertised in York and Lancaster Counties, Pennsylvania, for 150 four-horse wagons and 1,500 saddle or pack horses, offering 15s. a day for each wagon with four horses and driver, and 2s. a day for a horse with saddle or pack. The failure of the expedition caused him to be sued for damages to the amount of £20,000, in accordance with his agreement to compensate the owners if their property was not returned. He afterwards recovered the amount from the Government.³

A description of Ohio in 1770, sent to Lord Hillsborough, Secretary of State for the Colonies, in reference to the plan for the settlement of the Ohio then before the home Government, states that the expense of carriage is less in Pennsylvania than in any part of America.⁴

¹Faux, *Memorable Days in America*, 201-203.

²*Niles' Register*, XV, 384, Jan. 9, 1819. The fare by steamboat from New Orleans to the Falls of the Ohio in 1818 (or 1819) is, however, given as \$100, including provisions, by James Flint, in his *Letters from America*, 138.

³Earle, *Stage Coach and Tavern Days*, 242.

⁴James, *Ohio in 1788*, p. 52, quoting from *Observations Communicated to Lord Hillsborough*.

Boats carrying 800 to 1,000 barrels of flour could go in about a month from Pittsburgh to Pensacola, via the Ohio and Mississippi Rivers, at a charge of about 25s. per ton (16 barrels to the ton). Hemp, tobacco, iron, and other commodities could be carried down the Ohio to the ocean at rates at least 50 per cent cheaper than the same articles could be carried a distance of 60 miles in Pennsylvania.¹ This would go to show that the cost of transportation in Pennsylvania was nevertheless high. There were several iron forges in Lancaster County in operation before the Revolution, but they were unable to carry their products to Philadelphia and sell them at a sufficiently low price to compete with iron brought from Europe. In fact, the cost of wagon transportation for the 75 miles was more than twice the amount charged for the carriage of similar commodities across the Atlantic.² A bill paid in 1776 by the Continental Congress is as follows: "To Thomas Cheeseman, for carriage of 32 cwt. 1 qu. 3 lbs. saltpetre from Egg Harbor to Cooper's Ferry, opposite Philadelphia, \$22.52/90."³ A little later the rates for goods from Philadelphia and Baltimore to Pittsburgh were 45s. per hundredweight.⁴ From Philadelphia to Uniontown the rate was \$5 per hundredweight. In 1789, when pack-horse transportation started, the rate from Philadelphia to Carlisle was 30s., or \$4 per hundredweight. The first wagonload carried over the mountains by the Virginia or Braddock Road, from Hagerstown to Brownsville, was of over 2,000 pounds at \$3 per hundredweight. The trip took about a month.⁵ In the western country by water, however, the rate was much lower. By flatboat and barge, from St. Louis to New Orleans, the rate was \$6.75 per hundredweight.⁶

This proportion of charges seems to have remained fairly constant. In 1792, 1s. per hundredweight was the common charge for freighting goods from Redstone Old Fort to the Falls of the Ohio. Emigrants arriving at either Redstone Old Fort or Pittsburgh had their choice of purchasing a boat at about 5s. per ton or sending their goods at the above price.⁷ Similarly the charge for transportation from Baltimore to Redstone Old Fort (Brownsville) remained at \$3 per hundredweight.⁸ The Whisky Rebellion of 1794 disturbed conditions so that rates rose to from \$5 to \$10 per hundredweight on goods carried to Pittsburgh.⁹

The whole current of transportation was one way. There was practically no up-river traffic, and hence no definite rates are to be

¹Craig, *The Olden Time*, II, 7.

²Luetscher, *Struggle between Philadelphia and Baltimore for the trade of the Susquehanna* (MSS. in Wisconsin Historical Society Library).

³*Journals of the Continental Congress*, 1776, V, 722.

⁴Craig, *The Olden Time*, II, 339.

⁵Veech, *The Monongahela of Old*, 37.

⁶*Report on Internal Commerce of the United States*, 1887, in *House Ex. Doc. No. 6*, 50th Cong., 1st sess., xx, pt. ii. 41.

⁷Toulmin, *A Description of Kentucky*, 97.

⁸Monette, *History of the Discovery and Settlement of the Mississippi Valley*, II, 195.

⁹Gephart, *Transportation and Industrial Development in the Middle West*, 44.

found. In 1796 it was calculated, on the basis of trips already made, that salt could be freighted from New Orleans to Nashville at a cost of rather less than $37\frac{1}{2}$ cents per bushel, at the same rate as wheat from Nashville to New Orleans; this of course, via water.¹

Inland transportation was also of importance in the rapidly growing country drained by the four rivers, the Genesee, the Mohawk, the Susquehanna, and the Delaware. In some cases here there was traffic both ways, which materially lessened the cost. Freightage was apparently quite unorganized, each shipper making his own bargains. In 1790 the cost of a ton of freight from Schenectady to Rome is given as \$14, and is based on the cost of wages. This was without return freight. The trip to Rome and back required the services of 3 men and occupied 9 days.² Wheat began to be sent from the Genesee settlement to Philadelphia in 1792 at 1s. per bushel. To urge on the construction of water communication between the Susquehanna and the Schuylkill, it was asserted that the cost would then drop to 4d. Dry goods were sent to the new settlement at 8s. per hundredweight, and this, it was expected, would be reduced to 3s. when water navigation via the Mohawk was opened.³ The charter of the Western Inland Lock Navigation Company in 1793 placed \$25 per ton as the maximum charge for freight from either Ontario or Seneca Lake to the Hudson River, with other tolls pro rata.

A comparative statement of land and water carriage from Middletown, on the Susquehanna, to Philadelphia, made in 1794, is given in table 19.⁴

TABLE 19.

<i>Water carriage.</i>		<i>Land carriage.</i>	
Schuylkill and Susquehanna Canal.	70 miles.	From Middletown to Philadelphia. . .	100 miles.
Schuylkill, from Reading to Morris-		The present price of carriage from Middletown	
town.	46 miles.	to Philadelphia is 5s. 6d. per hundredweight,	
Schuylkill and Delaware Canal. . . .	16 miles.	or for 20 tons, £100-0-0.	
	132 miles.	Or £5 10s. per ton.	
Toll on 20 tons of produce for 86		Or 9s. 7½d. per barrel of flour.	
miles of canal navigation at 10		Or 2s. 1¼d. per bushel of wheat.	
cents per mile is.	£40-6-3	The same by land requires 20 men and 80	
Hauling 20 tons 132 miles:		horses.	
One man 5 days.	1-5-0		
One boy 5 days.	1-0-0		
One horse 5 days.	1-10-0		
Freight or hire of a boat.	18-9		
20 tons for.	£45-0-0		
Or £2 5s. per ton.			
Or 3s. 1¼d. per barrel of flour.			
Or 1s. 2¼d. per bushel of wheat.			
The above produce is conveyed to market by 2			
men and 1 horse.			

¹A *Short Description of the State of Tennessee* (printed for Mathew Carey, Phila., 1796), 35.

²Hulbert, *Historic Highways*, XIV, 20.

³*Documentary History of New York* (ed. by O'Callaghan), II, 649; cf. also Brigham, "The Great Road Across the Appalachians," 321-329.

⁴*American State Papers, Miscellaneous*, I, 858.

Robert Fulton, in a letter to Gallatin, stated that a barrel of flour (200 pounds) on the Lancaster Turnpike, from Philadelphia to Columbia, 74 miles, paid \$1 carriage. A broad-wheeled wagon carried 30 barrels or 3 tons and paid for turnpike tolls \$3. According to Fulton, the merchandise which was able to bear the expense of transportation then on the roads to Pittsburgh, and to Kentucky and Tennessee, or any other distance of 300 miles, and which for that distance paid \$100 a ton, could be boated on canals 10,000 miles for the like sum. The farmer or miller who lived 20 miles from market paid at least 22 cents to wagon a barrel of flour that distance. Fulton estimated that by canal it would cost 2 cents and the economy would thus be 20 cents. At 100 miles the economy would be \$1 and at 150 miles \$1.50. Over 150 miles flour would not bear transportation to market by roads. The expense of transportation on 300 miles of road he stated to be \$5 per hundredweight. If there were a canal from Philadelphia to Columbia, the company might receive a toll of \$6 for each ton carried instead of the \$1 received by the road, and still the flour would arrive at Philadelphia for \$7 a ton instead of \$10 which it cost at that time by road. Merchandise would arrive at Columbia from Philadelphia for \$3 a ton less than was then paid, to the benefit not only of the farmer and merchant, but would also add to the profits of the company by drawing a greater amount of commerce to the canal.¹

The comparative results of land and water carriage in reference to industry are further illustrated in a statement (December 8, 1801) by the Secretary of War, relating to the Tellico and Georgia factories established for the purpose of carrying on trade with the Indians. In March 1795 Congress appropriated \$50,000 and in April 1796 the additional sum of \$150,000, to be applied under the direction of the President of the United States to the purpose of carrying on trade with the Indian nations. In consequence, one trading-house was opened on the frontier of Georgia and another on the boundary between the State of Tennessee and the Cherokee Nation (Tellico). The report states that up to January 1, 1801, the Tellico factory showed a gain of only \$309.53, while the Georgia factory showed a gain of \$15,740.83. The merchandise was purchased at Philadelphia.

"The great disproportion of gain between the two factories is owing to the mode of transportation to either place, as all the merchandise forwarded to Tellico, as well as the peltry received from there, is transported the whole of the way by land at a high carriage; whereas the remittances to and from the Georgia factory are shipped to Savannah and from thence forwarded to the factory by wagons, which route reduces the freight and land carriage of articles to and from the latter place to less than one-third of the cost of transportation, on account of the Tellico factory."²

¹*American State Papers, Miscellaneous*, I, 917-919.

²*Ibid.*, *Indian Affairs*, I, 653-654.

Michaux states that merchandise conveyed from Philadelphia in large covered wagons drawn by four horses, harnessed two and two, paid a price for carriage not ordinarily exceeding 6 piasters the quintal, though varying with the season. The distance of 300 miles was covered in 20 to 24 days, and the comparatively high expense was said to be due to the fact that the wagons almost always returned empty.¹

Many of the arguments for internal improvements throw much light on the cost of transportation. Transatlantic carriage was notoriously cheaper than land carriage in the United States, even over good roads. A ton of goods, by weight or measurement, could be brought 3,000 miles from Europe at a cost of about \$9, but could not be carried on land at that price for more than 30 miles.

About 1807 the expense of the carriage of 100 barrels of flour from Columbia to Philadelphia by land was \$125; from Columbia to Baltimore by water through the canal, \$50; by water, down the bed of the river, when the state of the river admitted, \$70. In 1808 flour was conveyed by vessels from Christiana to Philadelphia for 20 cents per barrel, meal for 20 cents per barrel, iron at \$2 per ton, wheat at 6 cents per bushel, and tobacco at \$2 per hogshead. The following statements show comparatively the cost of transportation between two points by land and by water:

Cost of transporting a cargo of 50 tons from Newcastle to Frenchtown in 25 wagons . . .	\$100.00
Delay of vessel in loading and unloading at the extremities of the canal, one day each . .	10.00
Cost of loading and unloading 50 tons.	10.00
Total.	120.00

The cost of carrying the same amount of goods by the canal between the same places was as follows:

One vessel of 50 tons, requiring 1 man and 2 horses.	\$3.00
Tolls on 50 tons at 50 cents each.	25.00
Total cost via canal.	28.00

There was thus a balance of \$92 per 50 tons in favor of canal transportation, or nearly \$2 per ton. As a further comparison of the cost of land and water transportation, it was stated that goods were brought from Europe for 20 cents per cubic foot, while the price from Philadelphia to Baltimore was 12 cents on measured goods, not one-twentieth of the distance. Coal was taken from the James River to Philadelphia, 300 miles, for 8 cents per bushel, while freight for 30 miles on the Delaware was 4 cents, and the whole freight from the James River to Philadelphia would not have been sufficient to pay the land carriage, waste, etc., across the isthmus.²

The following items appear in the abstract of disbursements made for the transportation of General James Wilkinson's baggage and

¹Michaux, *Travels to the Westward of the Allegany Mountains*, 73.

²*American State Papers, Miscellaneous*, I, 758, 759, 760, 820.

stores from Washington City, Baltimore, and Philadelphia to Pittsburgh, in 1805:

For transporting 1,202 pounds of baggage from Washington City to Pittsburgh, at \$6 per hundredweight, etc.

For transporting 700 pounds of baggage from Baltimore to Pittsburgh, at \$4.50 per hundredweight.

For transporting one cask, 280 pounds net, from Philadelphia to Pittsburgh, at \$5.50 per hundredweight, etc.¹

From Baltimore over the mountains to Knoxville, Tennessee, the cost of carriage was 6 or 7 piasters the quintal. Farther south, from the upper Carolinas and Georgia to Charleston, the price was quoted at 4 francs, or 3*s.* 4*d.*, per quintal, for every 100 miles. For these routes, the means of transportation consisted of large wagons, drawn by 4 to 6 horses, which traveled 20 to 24 miles per day.²

TRANSPORTATION IN NEW YORK.

DeWitt Clinton's journal of his trip through western New York in 1810, as one of the canal commissioners, contains numerous citations of the cost of transportation, both by land and by water. The freight on goods at that time by the river from Utica to Schenectady was 75 cents per ton, and by wagon \$1 per ton. At Manheim, 51 miles from Schenectady, he was told by a tavern-keeper that transportation over the Mohawk and Schenectady Turnpike and via water to Schenectady were about equal in cost, but that the former was to be preferred on account of its superior safety and convenience.³ Produce was carried by land from Utica to Albany for 8*s.* per 100 pounds, and by water to Schenectady for 6*s.*⁴ The carriage via land for 1 mile around Oswego Falls, Oswego River, amounted to 1*s.* per barrel of salt. Pilots charged \$1 for conducting light boats over the falls. The conveyance of a barrel of salt from Salina to the Upper Falls of Oswego was, in times of good water, 2*s.*, and in low water 3*s.*, and the same charge was made from the Lower Falls to Oswego.

The cost of conveyance of a barrel of salt from Ithaca to Owego, New York, by land was 6*s.*, and from Owego to Baltimore by water 8*s.*, 14*s.*, in all. The price of transporting a barrel of salt from Oswego to Lewiston was 5*s.*, payable in salt at Oswego at 24*s.* per barrel; from Lewiston to Black Rock, 6*s.* per barrel, payable in salt at Black Rock at 48*s.* per barrel; and from Presque Isle to Pittsburgh 14*s.*, payable in salt at Presque Isle at 54*s.* per barrel. Clinton maintained that if the inland navigation were perfected salt could be conveyed from Oswego to Albany for 3*s.* per bushel.

To carry a barrel of potash from Ithaca to Schenectady cost \$6.50, and from thence to Albany 50 cents more. Further expenses of

¹*American State Papers, Miscellaneous*, II, 117; cf. p. 116 for statistics of freight for flour, etc.

²Michaux, *Travels to the Westward of the Allegany Mountains*, 273.

³Renwick, *Life of DeWitt Clinton*, 170; Campbell, *Life and Writings of DeWitt Clinton*, 41.

⁴Campbell, *Life and Writings of DeWitt Clinton*, 50.

transportation, storage, and commission to New York via Albany made the final cost of transportation at New York \$7.75 per barrel.¹ A barrel of potash could, however, be sent from the mouth of the Genesee to Montreal for 20s.

There was no great difference in the expense of sending flour to Montreal via Oswego and to Baltimore via Owego, but the former was esteemed the more certain market. The cost of sending a barrel of flour from the mouth of the Genesee to Montreal amounted to 10s., but this was said to be below the ordinary charge on account of unusual competition at that particular time. The cost of carrying a barrel of flour from the region of Caughnawaga, 40 miles, to Albany, by land was 5s.

Hemp for a manufactory near Lewiston cost \$380 per ton and was brought from the Genesee Falls at a cost of transportation varying from \$80 to \$100 per ton. The cost of transporting 1,000 staves from the Genesee to Montreal was \$85 to \$90, and across Lake Ontario \$45 to \$50. A barrel of pork was carried the same distance for 10s.²

Transportation from Ithaca to Schenectady by water cost \$1.26 per hundredweight, and by land \$1.50; large wagons carrying 40 or 50 hundredweight from Geneva to Albany for \$3 per hundredweight, carrying and returning with a load in about "20 days out and home" (*i. e.*, 20 days there and 20 days return). From Auburn to Albany the charge was 22s. per hundredweight in going and 10s. in returning with a load. This method of transportation was said to be as cheap as water carriage and safer. A ton of goods could be transported from Canandaigua to Utica by land for 20s.

At the same period wheat was worth 50 cents per bushel on the lakes and cost 75 cents per bushel to transport to New York City. Wheat was sent from the neighborhood of Wood Creek to Hudson by road, 150 miles, at a cost of 67 cents per bushel. According to a speech by Mr. P. B. Porter in the United States House of Representatives, February 8, 1810, the low price of wheat on the lakes, 50 cents per bushel, was owing solely to the expense of conveying it to market, and he asserted that it cost from 75 cents to \$1 per bushel to transport wheat from the lakes to New York City.

Tolerably good navigation up and down the St. Lawrence was said to exist at this time, but the cheapest rate at which transportation had been performed within the ten years preceding 1811 between Kingston and Montreal was, according to the most reliable information obtainable, \$1 per hundredweight ascending and half as much descending.³

The greater part of domestic commerce at this time consisted of bulky articles, a considerable portion of which paid, it was maintained,

¹Campbell, *Life and Writings of DeWitt Clinton*, 159.

²*Ibid.*, 113.

³New York Canal Commissioners, *Report in Reference to the Western Canal, to the Senate and Assembly of New York*, Feb. 1811, in *Public Documents Relating to New York Canals*, 27.

50 per cent of their initial value for transportation to market.¹ After the improvements of the Western Inland Lock Navigation Company began to affect the carrying trade, the cost of transportation seems to have gone down. In 1813 the lowest rate of transportation from Albany to Oswego, on merchandise, was \$2.16 per hundredweight for the whole distance, distributed as follows: Albany to Schenectady (by land), 16 cents per hundredweight; Schenectady to Utica, 75 cents per hundredweight; Utica to Oswego, including lockage, portage, etc., \$1.25 per hundredweight. From New York to Albany bulky articles paid about 40 cents per hundredweight, and heavy articles 10 cents to 20 cents. The cost of transportation from New York to the Great Lakes at Oswego was thus \$2.25 to \$2.50 per hundredweight.²

Robert Fulton, in a letter to Gouverneur Morris, in 1814, on the proposed canal in New York, said that the usual price of freight from Albany to New York for a barrel of flour was 2s. to 2s. 6d., and for a barrel of potash or pork, 3s. It cost \$2 to carry a barrel of flour a distance of 130 miles overland, and the expense checked agriculture and the improvement of the country.³

(The citizens of New York City in 1815 argued for their ability to compete for the western trade by stating that the expense of transportation by water from there to Sandusky, including the carrying places, was \$4.50 per hundredweight. They estimated the whole expense from New York City at \$6.50 per hundredweight, or only 50 cents more than the transportation from Philadelphia to Pittsburgh. The usual cost of transportation by land was \$1.60 per hundredweight or \$32 a ton for 100 miles. In pointing out the danger of the western trade being diverted to Montreal it was stated in a memorial of citizens of New York City that it cost but \$1.50 to transport a barrel of flour from Cayuga Lake to Montreal, while it could not be shipped to Albany for less than \$2.50.⁴

By 1818 a regular line of wagons and packets was established between the city of New York and Detroit, and the cost of carriage did not exceed \$4.50 per hundredweight.⁵

As the Erie Canal was begun in 1817, it is of interest to assemble the statistics of cost of transportation between the western country and the State of New York from that time to 1820. The cost of transporting wheat from Buffalo to New York in 1817 was nearly three times its value at New York; of oats, six times the value at New York; and of cured provisions, far in excess of the market value in that city.⁶

¹Stevens, *Documents Tending to Prove Superior Advantages of Railways and Steam Carriages over Canal Navigation*, 8, 9.

²Spafford, *Gazetteer of New York*, 15.

³*Niles' Register*, VI, 169-171, May 14, 1814.

⁴*Public Documents Relating to the New York Canals*, 85.

⁵*Niles' Register*, XIV, 314, Feb. 21, 1818.

⁶Andrews, *Report on Trade and Commerce of British North American Colonies*, 1852, p. 278.

The cost of transportation by land from Buffalo to Albany at the same date was \$100 per ton.¹ The expense of transportation to Montreal was \$30 a ton, and the returning transportation from \$60 to \$75 a ton, while the freight from New York to Buffalo was about \$100 per ton, and required 20 days.²

In 1817 the toll alone paid for a barrel of flour passing the locks of the Western Inland Lock Navigation Company in a distance of 100 miles was 52 cents and for a ton of goods \$5.25, besides a considerable duty upon vessels.¹ In 1818 the same company charged at Little Falls and the German Flats at the rate of \$2.38 per ton, including toll on the boat, and at the rate of \$3.27½ for passing from the Mohawk River through the canal at Rome into Wood Creek, making a total of \$5.75 for passing on an artificial navigation of from 10 to 15 miles.³

During the same year the transportation of goods from New York City to Pittsburgh via the Hudson and Allegheny Rivers was performed at the rate of \$5 per hundredweight, free of all charges except cooperage, or at the rate of \$100 per ton.⁴ It was stated in 1817 that the merchants living in Oneida County and the counties west paid annually for transportation not less than \$1,000,000.⁵ By the close of the period the cost of transportation across the mountains had been reduced by means of improvement in roads and by other causes to \$70 per ton, whereas it had formerly been \$120 per ton via the Pennsylvania route.

By utilizing the Erie Canal when constructed, the average cost of transportation from New York to Pittsburgh by the village of Erie and the headwaters of the Ohio was estimated at \$35 per ton. With a good road from Lake Erie to Pittsburgh the cost would be reduced to \$28 per ton. In either case the effect of such a disparity in the course of trade would be that New York would displace Philadelphia and Baltimore as a source of supply to the West.⁶

It was asserted in 1820 that under the conditions then existing goods had been lately purchased in New York, sent thence to Albany in a sloop, carried thence to Buffalo in wagons, thence to Huron in a sloop, and thence 105 miles into the country in wagons at a less expense than that at which they could have been sent from Philadelphia, though more slowly.⁷ In May 1820, Jedidiah Morse passed along the Erie Canal from Utica to Montezuma, the part then finished, and passed a

¹New York Canal Commissioners, *Report*, Mar. 10, 1817, in *Public Documents Relating to the New York Canals*, 239.

²Joint Committee on Canals, *Report*, Mar. 19, 1817, in *Public Documents Relating to the New York Canals*, 247.

³*Hunt's Merchants' Magazine*, XXIII, 616, Dec. 1850.

⁴*Niles' Register*, XV, 267, Dec. 12, 1818.

⁵Joint Committee on Canals, *Report*, Mar. 19, 1817, in *Public Documents Relating to the New York Canals*, 248.

⁶*Public Documents Relating to the New York Canals*, xviii.

⁷New York Canal Commissioners, *Report*, Mar. 7, 1820, in *Public Documents Relating to the New York Canals*, 393.

raft of 446 tons of timber coming down the canal, drawn by 3 horses, at the rate of 18 miles in $1\frac{1}{2}$ days. He estimated the expense at \$50, while the transportation of the same quantity by land would have cost \$1,200.¹ It was estimated in 1817 that the proposed canal would reduce the cost of transportation from New York to Buffalo from \$10 to \$12 a ton.

At the close of the period the price of conveyance from Albany to Buffalo was from \$85 to \$100 per ton, \$90 a ton being considered a fair estimate. It was estimated that upon the completion of the canal a ton would be transported from Albany to Buffalo for \$8.53, or a clear gain of \$81.47 on each ton. Of this \$8.53, \$5 was assigned to tolls and \$3.53 for actual expense of conveyance.² The average cost of transportation to northeastern Ohio was at that time also about \$90 per ton. Upon the completion of the canal the charge was expected to drop to \$20. The average expenses of conveyance for about 8,000 square miles, extending within 40 miles of the Ohio River, were estimated at \$93 per ton. Considering Sandusky as the point of distribution for this region, it was calculated that the canal when finished would produce a saving of at least \$42 a ton, or, say, \$30 per ton for any part whatsoever of the State. The cost of conveyance from Pittsburgh to the central parts of the northeast section of Ohio, about 16,000 square miles in extent, was estimated at \$114 per ton. The completion of the canal was expected to reduce this charge to \$24, a difference of \$90 per ton. The cost of transportation of merchandise into Illinois, considering Fort Harrison as the point of distribution, was estimated at \$130 per ton, via the Ohio River, from Philadelphia or from New Orleans. Upon the completion of the canal and the construction of a road from the southern extremity of Lake Michigan a difference of \$50 or \$60 per ton was anticipated.³

How well justified these anticipations were⁴ is proved by the fact that in the 20 years, 1830 to 1850, the cost of transportation between Buffalo and Albany averaged \$7.78 and from Buffalo to New York \$8.81 per ton.⁵

TRANSPORTATION INTO THE WESTERN COUNTRY.

About 1816-17, when it appeared that as a result of the development of steam navigation permitting up-stream traffic, New Orleans was about to become the great emporium of the country, comparisons of the cost of transportation via the Ohio and Mississippi Rivers, with the cost to the particular Atlantic seaports, rank in importance with comparisons of the cost from the Mississippi Valley to the various sea-

¹Morse, *Report to Secretary of War on Indian Affairs*, 63, app.

²*Public Documents Relating to the New York Canals*, xxii.

³*Ibid.*, xix.

⁴When the Erie Canal was built the rate per hundredweight by canal was only one-tenth the rate charged by teamsters on the Genesee Road. See Hulbert, *Historic Highways*, XII, 146.

⁵*Hunt's Merchants' Magazine*, XXIII, 387, Oct. 1850.

ports themselves. To send goods to Cincinnati in 1817 from New Orleans required 100 days and cost 5 cents per pound.¹ Immigrants could float their goods down the Ohio from Pittsburgh at from 2s. 3d. upwards per hundredweight per 100 miles. Freight from a certain point in Illinois (in the vicinity of the present city of Peoria) to Louisville, 307 miles, was 5s. per hundredweight, but from Louisville to the same point the charge was but 1s. 8d. From the same point in Illinois to New Orleans, 1,130 miles, the charge was 4s. 6d., while the return freight was 20s. 3d. The difference in the charge for freight up and down stream was due to the difference in the time required for the navigation.²

The freight charge from Pittsburgh to Marietta was \$1 per barrel of 5 bushels, or 50 cents per hundredweight for dry goods.³ In 1818 goods were carried from Limestone, Kentucky, to Lexington, for \$1 per hundredweight, though this was somewhat lower than the usual rate. From New Orleans to Louisville, 1,412 miles, the rate was from 18s. to 22s. 6d. per hundredweight, while the down freight was 3s. 4½d. to 4s. 6d. per hundredweight.⁴ In 1818, by steamboat, rates for merchandise from New Orleans to Shawneetown, Illinois, were from 4½ cents to 6 cents per pound. These rates were considered very high, and they were expected to drop one-half during the summer of 1819 on account of the new steamboats then building.⁵ In 1819 it cost 25 cents per bushel to send corn from Vincennes, Indiana, to New Orleans. Salt was brought in return for 50 cents per bushel and sold at Vincennes at \$2 to \$2.25.⁶ The minimum price of carriage for 100 pounds for every 20 miles was 50 cents in Indiana in 1819, though it was sometimes higher. Faux estimated that if corn were hauled by weight it would not pay carriage for 20 miles.⁷ As an illustration of the relations between farming and the cost of transportation, the following instance is given:

"Mr. Maidlow has bought several loads of corn at 33 cents a bushel, . . . and carted by the farmer 12 miles into the bargain. Forty bushels is a load for 4 horses, through the worst roads, taking 2 days at \$4 a day for carriage, so leaving only 17s. for 40 bushels to the poor farmer. Or, if bought at 25 cents, as it often is, only 9s. for the 40 bushels."⁸

The cost of carriage from Princeton, Indiana, to New Orleans was 2½ cents per pound.⁹

¹Fearon, *Sketches of America*, 432.

²*Ibid.*, 260.

³Palmer, *Journal of Travels*, 59.

⁴Fearon, *Sketches of America*, 246.

⁵Birkbeck, *Extracts from a Supplementary Letter from Illinois*, 4.

⁶Welby, *A Visit to North America and the English Settlements in Illinois*, 94.

⁷Faux, *Memorable Days in America*, 315.

⁸*Ibid.*, 315. (Faux, however, never understates disadvantages in America. His statements are often extravagant.)

⁹*Ibid.*, 327.

In explanation of the practice of driving swine to the lake or to the Ohio River for purposes of slaughtering in 1820, it was stated that the average cost of land carriage from within the State of Ohio to places where the salt pork and bacon could be embarked was scarcely less than 50 cents per hundredweight, even during the dull times then prevailing. Land carriage was \$1.50 per hundred between Columbus and the Ohio River. Water transportation within the State was not to be depended upon.¹ Flour was freighted from the Falls of the Ohio to New Orleans in 1820 at \$1.25 per barrel at the minimum. It was not then regarded as probable that the price would be reduced, as the boats, which cost \$100 to \$150, were generally disposed of at New Orleans for a sum not exceeding the tenth part of their cost. Opportunities were but seldom offered to ship in steamboats, owing to the difficulty of passing the falls. The rate at that time on foreign goods from Pittsburgh or up the river from New Orleans was from 3 cents to 5 cents per pound or \$67 to \$112 per ton.²

These figures show somewhat of a decline from those quoted by Birkbeck two years previously, and to a certain extent justify his anticipations of a decline in the price of freight. The toll allowed for boats passing the Falls of the Ohio in 1818 was \$1.50 per ton.³ Goods could be brought up from New Orleans to any part of the valley of the Ohio for \$2.50 to \$3 per hundredweight, while the transport from Baltimore to Philadelphia would cost \$7 or \$8. The reasons assigned for the fact that New Orleans was not under these circumstances exclusively resorted to have been given above. Goods from the section of Ohio east of Zanesville formerly found a market at New Orleans, but in 1820 the latter market was supplied from sections more conveniently situated than Ohio. The boats which carried 100 to 500 barrels sold at New Orleans for only \$16.⁴

COMMERCIAL AND INDUSTRIAL CONSEQUENCES OF TRANSPORTATION COSTS.

Some statistics as to the cost of transportation from Philadelphia, Baltimore, and other eastern cities to the West have been given above. The volume of traffic can not be accurately determined, but in 1815 the aggregate wagonage from Philadelphia and Baltimore to Pittsburgh in the single month of July amounted to \$103,000 and in August to \$112,000.⁵ Birkbeck states the cost of carriage from Philadelphia to Pittsburgh in 1817 at about \$7 per hundredweight, and estimates that the money paid annually on this route for the conveyance of goods

¹Letter from Governor Brown of Ohio to Charles G. Haines, Sept. 20, 1820, in *Public Documents Relating to the New York Canals*, 453-457, app.

²Communication from W. Steele to the Ohio legislature in 1820, in *Edinburgh Encyclopedia*, XIV, 333.

³*Niles' Register*, XIV, 14, Feb. 21, 1818.

⁴Faux, *Memorable Days in America*, 341.

⁵New York Canal Commissioners, *Report*, Mar. 7, 1820, in *Public Documents Relating to the New York Canals*, 392.

exceeded £300,000 sterling.¹ In another place he states the cost of carriage over the same route to have been from \$7 to \$10 per hundredweight, thus indicating that \$7 was the minimum charge at that time. He adds that no heavy implements would pay the cost of carriage. Fearon states at the same period that the freight, carriage, and other expenses attending the import of such articles as coarse pottery from England to Pittsburgh was from 100 to 200 per cent on the original cost.² During 1818 it was estimated that not less than \$18,250,000 worth of merchandise was transported in wagons from Philadelphia to Pittsburgh, and the expense of conveyance amounted to \$750,000. For the three years 1817, 1818, and 1819 the expenses of transportation to Pittsburgh amounted to \$1,560,000 each year.³ The cost per ton for carriage in 1818 was stated at \$8 per hundredweight.⁴

In 1818 the carriage of goods from Baltimore to Wheeling was cheaper than from Philadelphia to Pittsburgh. This was doubtless due to the fact that the opening of the Cumberland Road to Wheeling about that time afforded a shorter and cheaper route to Baltimore.⁵ Before the completion of this road from 4 to 6 weeks were usually occupied in the transportation of goods from Baltimore to the Ohio River at a cost of \$6 to \$10 per hundredweight. By 1832 the time had been reduced more than one-half and the cost at least one-half.⁶ According to Faux, the carriage of flour from Greensburg, Pennsylvania, to Baltimore, the only market, cost \$2.50 per barrel, while flour sold at Baltimore for \$5 per barrel.⁷ In the spring of 1821, \$8 per hundredweight was paid for carrying barrels of mackerel from Philadelphia to Somerset. At the same period the rate of charge for the transport of freight from Philadelphia to Pittsburgh was \$11 per hundredweight, though this charge was unusually high on account of an unfavorable season.⁸

While these high transportation costs operated as a restriction upon commercial interchange and upon the industrial development of the East, in so far as the East depended upon the West for markets they operated as a stimulus to industrial development in the communities of the West for local consumption. This stimulus to diversification of economic employment may not have been altogether disadvantageous to the West, although any incidental advantages were certainly inconsiderable in comparison with the economic disadvantages consequent upon isolation and remoteness from markets for agricultural products. A comparison of the relative costs of trans-

¹Birkbeck, *Notes on a Journey in America*, 36.

²Fearon, *Sketches of America*, 206.

³*Public Documents Relating to the New York Canals*, xvii; see also Mills, *Inland Navigation*, 81.

⁴*Public Documents Relating to the New York Canals*, 393.

⁵Flint, *Letters from America*, 81.

⁶Searight, *The Old Pike*, 108.

⁷Faux, *Memorable Days in America*, 343.

⁸Ringwalt, *Development of Transportation Systems in the United States*, 27.

portation from the cities of New York, Philadelphia, and Baltimore to the West at the close of the period, and consideration of the developments which were threatening a loss of that trade by Philadelphia through diversion to New Orleans and to New York and Baltimore over new and cheaper routes of transportation which were either already established in part or nearing completion, will reveal the motive that led the State of Pennsylvania to undertake a connected system of internal communication with western waters. Another incentive is found in the fact that foreign producers had an advantage in the Atlantic coast markets.

The effect of inadequate transportation facilities upon home industry was stated as follows in 1816:

"A ton of goods by weight or measurement (of 40 cubic feet) was frequently brought from Europe, a distance of 3,000 miles, for 40s. sterling, or about \$9; this rate admitted salt, coal, stone, lumber, and most bulky articles, which were imported from beyond the seas cheaper than they could be conveyed for a very short distance by land, since a ton of goods could not be carried on good roads for the same price more than 30 miles. The charges for conveyance through the United States were very great, even for fine and valuable articles; but on the bulky products of agriculture and on mineral productions they operated as a total exclusion. . . . A coal-mine might therefore exist in the United States not more than 10 miles from valuable ores of iron and other materials, and both of them be useless until a canal were established between them, as the price of land carriage was too great to be borne by either. The conveyance of produce coastwise by sea did not lessen the expense in any manner proportioned to that of canals, or even of foreign vessels, for which the following reasons were assigned. First, the coasting trade was chiefly carried on in vessels which took their produce from and delivered it into small ports; these vessels were therefore generally small and were navigated at a far greater expense in proportion than large vessels. Second, the danger of coasting voyages was greater, which proportionally increased the risk and prices of insurance. Third, the delays of delivery, accident, etc., port charges, repairs, and other expenses were cumulative on small vessels; hence goods were frequently brought from Europe at nearly as low a cost as they could be conveyed by sea from Baltimore to Philadelphia, cities which by land were not more than 100 miles from each other. This was remarkably the case with respect to coal, which was brought into most of our maritime cities from Liverpool and sold as cheap as it could be brought to them from James River, not one-sixth of the distance."¹

THE TRANSPORTATION OF MILITARY SUPPLIES.

The imperative necessity of moving men and supplies quickly for defense or attack in case of war, or as a precautionary military measure, was an important factor in the development of routes into and across the western country. From the time of Braddock's expedition inadequate transportation facilities levied heavy toll upon the army, and were a serious handicap in military operations.

¹"Observations respecting the Chesapeake and Delaware Canal." by a committee of the president and directors. Attached to a report in the U. S. Senate, Feb. 6, 1816, in respect to that canal, in *American State Papers, Miscellaneous*, II, 286-287.

With the advent of the War of 1812 the ordinary course of trade was interrupted, especially along the Atlantic coast and in the region of the Great Lakes. Water transportation was in many cases temporarily abandoned, and the supplies and heavy equipments necessary for military purposes were transported by land at an enormous cost. Munitions of war for the armament on Lake Erie were sent from the seat of government at an expense of \$1,500 to \$2,000 per cannon costing originally only \$400. At Fort Meigs, during the northwestern campaign, flour cost the Government \$100 per barrel and oats \$60 per bushel, taking into account the cost of forage for the horses used in transportation and of the horses that were lost.¹

Even after the close of the war the Government was paying \$127 per barrel for pork to sustain the western garrisons. It was asserted that enough money had been wasted during the war for want of military roads and canals to turnpike the whole western country.²

It is probable that \$60,000,000 was expended for transportation during the War of 1812.³ Cannon cost \$1 per pound on account of the high expense of transportation, and flour \$40 to \$50 per barrel.⁴ The charges for transportation went far to swell the war debt of \$80,000,000 and upwards.⁵ The cost of "wagonage" across the peninsula between Chesapeake and Delaware Bays over the four separate lines of transportation in use during the War of 1812 amounted in one year to not less than \$414,000.⁶ The prodigious sums of money expended in the efforts to reoccupy the Northwest would, according to the report of a committee in the United States House of Representatives, May 12, 1820, have constructed many roads, which, if they had existed at the time of the war, would have prevented the even temporary loss of that section of the country.⁷ On account of the war risk and the interruption of the coast trade, Louisiana cotton cost in Massachusetts, at one time, 45 cents per pound, Louisiana sugar \$30 per 112 pounds, and Ohio flour \$20 per barrel.⁸

It was asserted that the Allegheny River could be improved and made advantageous to the Government in time of war for a cost little exceeding one-fourth of the expense incurred in transportation between Pittsburgh and Erie during the War of 1812.⁹ At the close of the war goods were sent from Boston via Philadelphia, Pittsburgh, and the

¹See Shriver, *An Account of Surveys and Examinations, Relative to the Projected Chesapeake and Ohio and Ohio and Lake Erie Canals*, 69.

²Haines, *Considerations on the Great Western Canal*, 21-22, quoting Tallmadge in a debate in Congress.

³See also Perkins, *Historical Sketches of the United States, 1815-1830*, p. 357.

⁴Way, *Thesis MSS.*, chap. ii, refers to *Debates of Congress*, 18th Cong., 2d sess., 676; 19th Cong., 1st sess., 1511; also to Clay, *Works* (Federal ed.), I, 464.

⁵*Public Documents Relating to the New York Canals*, xl.

⁶*American State Papers, Miscellaneous*, II, 286.

⁷*Ibid.*, 593.

⁸Western Rail Road Corporation, *Proceedings*, Dec. 12, 1838, pp. 12-13.

⁹Hazard, *United States Commercial and Statistical Register*, I, 393, Dec. 1839.

Ohio and Mississippi Rivers to New Orleans, and thence by land and by boats to Mexico. The expense to New Orleans was only $4\frac{1}{2}$ per cent on the cost of the goods at Boston, while the insurance alone by sea was 25 to 30 per cent and the total charges by sea 30 to 32 per cent of the original cost.¹

The rules and regulations for the Army of the United States in 1813 in reference to the allowances to be made to the officers for the transportation of baggage were as follows: "When officers are ordered on distant commands the following rates are to govern in the allowance made to them: for the transportation of their baggage at \$2 per 100 pounds per 100 miles," etc. There are almost countless other references to the enormous cost of transportation incident to the War of 1812 and resulting from inadequate facilities and routes of transportation. The almost universal opinion was that the expense thus incurred would have been more than sufficient to construct the facilities that were lacking.²

October 24, 1818, the same allowance made in 1813 to the officers of the army for the transportation of their baggage, namely, \$2 per 100 pounds per 100 miles was granted, an indication that conditions of transportation had not greatly changed in the interim.³

The estimates made of the expected cost of transportation in connection with the Missouri and Mississippi expeditions of 1819 may be of interest as giving a general view of the conditions of transportation on the far western frontier. The estimated cost of the transportation of provisions, ordnance, ordnance stores, camp equipage, and troops in 1819, comprising two regiments—the Sixth Regiment of infantry from Plattsburg, New York, via New York, Pittsburgh, and St. Louis to Council Bluffs, 2,628 miles, and a detachment of riflemen from Bellefontaine, Illinois, via the Missouri River to Council Bluffs, 670 miles, amounted to \$152,994. The estimated cost of transportation of provisions, ordnance, ordnance stores, camp equipage, and troops in 1819 on the Mississippi expedition was \$37,068.16. The troops consisted of the following detachments, moved from various places as follows:³

One regiment moved from Philadelphia via Pittsburgh and St. Louis to Council Bluffs, 2,350 miles.

One regiment from Prairie du Chien via Bellefontaine and the Missouri River to Council Bluffs, 1,270 miles.

One regiment from Martin Cantonment via the Missouri River to Council Bluffs, 280 miles.

¹*Niles' Register*, III, 346-347, Jan. 30, 1813.

²*Ibid.*, IV, 177, May 15, 1813; VI, 207, May 28, 1814; also *American State Papers, Miscellaneous*, I, 141; Speech by Mr. Hemphill, House of Representatives, Mar. 23, 1830; letter from Gen. Lewis Cass to Secretary of War, *American State Papers, Miscellaneous*, II, 596; *Ibid.*, 222, 284, 286, 424-425, 593, 977; McMaster, *History of the People of the United States*, IV, 218-222, 320.

³Paymaster General's Office, in *American State Papers, Military Affairs*, I, 801.

A detachment of the Fifth Infantry from Philadelphia via Pittsburgh and St. Louis to Prairie du Chien, 2,180 miles.

A large detachment of the Fifth Infantry from Detroit via Green Bay, Fox and Wisconsin Rivers to Prairie du Chien and thence by the Mississippi River to St. Peter, 1,270 miles.

Some of the itemized statements of the actual cost involved in the expeditions are shown in table 20.¹

TABLE 20.

To 207,442 pounds of ordnance, ordnance stores, quartermaster's and hospital stores shipped on board the steamboat *Jefferson* from Pittsburgh to St. Louis and Bellefontaine at 3 cents per pound.

To 207 passengers at \$12 each.

To 175 casks of clothing, etc., from Louisville to St. Louis at \$6 each.

To 3,300 pounds, consisting of 20 boxes medicine, axes, stores, etc., at 2 cents per pound.

To services rendered in conveying a boatload of the above articles from the head to the foot of the Falls at Louisville, \$125.

To detention of steamboat *Expedition*, deducting for unloading, at \$33.37 per day.

To detention of steamboat *Johnson*, deducting for unloading, at \$200 per day.

To 290 pounds of provisions, etc., shipped on board the *Expedition*, from Bellefontaine to Council Bluffs, at 16¼ cents per pound.

To similar shipments via the *Johnson* and the *Jefferson*, at 16¼ cents per pound.

In 1821, 400 pistols and 200 sabers were transported from Pittsburgh to Arkansas Territory for \$25.39.

An abstract exhibiting receipts in the Indian Trade Department from April 1, 1811, to December 31, 1820, inclusive,² gives the original cost of the merchandise forwarded each year to the several factories and the corresponding cost of transportation for each year. In 1822 the cost of carrying Indian goods from Georgetown, D. C., to St. Louis was said to vary according to circumstances. The previous year the cost had been on an average 4¼ cents per pound, and during the year 1822 was about the same. The charge had in the past been as high as 9 cents per pound, though so high a cost was unusual. The ordinary charge ranged between 4 and 6 cents per pound.

¹*American State Papers, Military Affairs*, II, 68-69.

²*American State Papers, Indian Affairs*, II, 246.

CHAPTER III.

TRAFFIC BY RIVERS, TRAILS, AND ROADS IN THE TRANS-APPALACHIAN REGION.¹

Difficulties of navigation on the Ohio and the Mississippi, 94. Importance of minor streams, 95. Early river craft, 95. Boat building on the Ohio, 99. Early commerce on the Ohio and the Mississippi, 99. Land routes, 102. The steamboat and industrial development of the West, 102. Economic progress and the development of traffic on roads and waterways, 109.

DIFFICULTIES OF NAVIGATION ON THE OHIO AND THE MISSISSIPPI.

Once across the mountains, the early tide of migration and trade found in the main, as has been noted, only Indian trails and rivers. With few exceptions the great roads westward ended at the Ohio, and in the journey by water from points of embarkation on the river, settlers not infrequently encountered greater difficulties than in the journey from their eastern home through the wilderness. Until some time after the war, travel down the Ohio continued hazardous, both on account of hostile savages and on account of the natural difficulties in the way of navigating the river. Moreover, boats could not always be obtained for the trip down the Ohio, and the cost of the river journey was often considerable. Many pioneers therefore chose the land-route into Kentucky, going around by Cumberland Gap. Later, when the difficulties of the Ohio had decreased, that river became the great outward route for settlers, and the main avenue of commerce. The fact that a large navigable stream flowed westward was of importance in the westward spread of population, and, although it is not possible to determine exactly what proportion of the early settlers came to Ohio by water, the Ohio River was unquestionably the route most extensively used in the general advance of population from the regions east of the Alleghenies into the territory between those mountains and the Mississippi River. As population increased an increasing volume of traffic swept down the Ohio, borne westward by the current along with the settlers themselves, and continuing on down the Mississippi to its mouth.

The instability of the banks and the presence of shoals and hidden obstacles constituted the greatest impediments to navigation on the Mississippi, while on the Ohio ice at certain seasons and high winds were encountered.² Under favorable conditions boats sometimes passed from Pittsburgh to the mouth of the Ohio in 15 days. Generally 10 days from Pittsburgh to the Falls of the Ohio was considered a quick passage. When the water was low, travel on the Ohio was

¹The following pages are taken from Gephart, *Transportation and Industrial Development in the Middle West*, 57-64, 69-81.

²Hulbert, *Historic Highways*, IX, 84 *et seq.*

exceedingly slow. In one instance 31 days were spent descending the Monongahela and Ohio to Marietta, though it had required in this case only a little less than twice that time to come by land in a cart drawn by oxen from Killingly, Connecticut, to the Monongahela. The first pioneers into the interior of Ohio, Kentucky, and Indiana preferred the land to the water routes, according to Hulbert, who asserts further that the lesser streams were never used by either whites or Indians to any great extent as routes of travel.¹

During seasons of low water the navigation of the Ohio from its formation to Old Mingo Town, a distance of some 75 miles, was difficult, but over the remainder of the course to the Mississippi keel-boats or barges of 100 to 200 tons found easy passage, except at Louisville, where the falls formed for many years a great obstacle to navigation. Between Pittsburgh and Cincinnati, however, there were 53 islands, to avoid which required caution and skill. In high water, boats of 400 tons could be taken down the Ohio with little difficulty, except that they were unwieldy where islands or short bends in the river were encountered, and by 1810 boats of this tonnage had descended to New Orleans.

IMPORTANCE OF MINOR STREAMS.

In considering the volume of traffic on the Ohio and the Mississippi, the commercial importance of the smaller streams should not be overlooked. These small streams served as traffic feeders for the great rivers, and as commercial highways in regions which must, in the absence of such avenues, have continued for many years in commercial isolation. In the early history of Ohio, for example, when the industrial life was simple and roads were lacking, the value of such streams as the Muskingum, Hocking, Scioto, Miami, and Cuyahoga for transportation purposes was very great. Lake Erie on the north and the Ohio River on the south were the main avenues of approach to the region and the main agencies of settlement and commerce along the northern, eastern, and southern borders, but the tributary rivers mentioned were important agencies of settlement and development, since they afforded easy access to the interior of the State, and, after settlements were established, rendered double service—as outlets for the raw products of the settlers and as inlets for necessities brought in from the east or south.²

EARLY RIVER CRAFT.

It was expected that the farmers and merchants who would settle along the Ohio would build ships for the purpose of carrying on the river trade. As early as 1775, Gibson and Linn, two soldiers, descended the river from Pittsburgh to New Orleans in order to procure military stores for the troops stationed at Pittsburgh. After many difficulties

¹Hulbert, *Historic Highways*, 61–62.

²Hall, *The West: Its Commerce and Navigation*, 112.

they succeeded in bringing back 136 kegs of gunpowder in the spring of 1777, although at the Falls of Louisville they were compelled to unload and carry the cargo around the rapids.¹ Captain Jacob Yoder is said to have taken the first flatboat down the Ohio and Mississippi Rivers to New Orleans in 1782.² In 1793 Jacob Meyers advertised in the *Kentucky Gazette* to carry passengers, letters, etc., from Pittsburgh to Limestone by the river. An armed sailing and rowing boat was to accompany as a convoy to the other boats.³

In 1794 a line of passenger boats was started from Cincinnati. The *Centinel* thus describes these boats:⁴

"Two boats will travel between Cincinnati and Pittsburgh. The first boat leaves Cincinnati at 8 o'clock, and returns to Cincinnati so as to sail again in four weeks. The proprietor of these boats having naturally considered the many inconveniences and dangers incident to the common method heretofore adopted of navigating the Ohio, and being influenced by the love of philanthropy, and desirous of being serviceable to the public, has taken great pains to render the accommodations on board as agreeable and convenient as they can profitably be made. No danger need be apprehended from the enemy (Indians), as every person on board will be under cover, made proof against rifle or musket ball; convenient port-holes for firing will be found on each boat."

Rules, regulations, and time-tables were posted in the boats and in the office at Cincinnati and at Pittsburgh. There were also insurance offices at these points and at Limestone. In 1798 the two sea-going vessels, the *President* and *Senator Rose*, were built at Pittsburgh, and in the same year a 120-ton brig, *Commodore Preble*, was constructed at Marietta.⁵ From this time many vessels were built at Pittsburgh and other points on the Ohio and Mississippi to carry on the traffic of these regions, for production was rapidly increasing.

The first boats which were used for navigating the Ohio were the flatboats, arks, keel-boats, and barges. The early boats rarely used sails and received only occasional aid from their oars, but depended almost wholly upon the current of the stream to carry them to their destination. It usually took a month to go from Pittsburgh to New Orleans; but the return trip, when there was one, often occupied 4 months. The flatboat and the ark were used only to descend the streams, while the keel-boat and barges could with difficulty be propelled upstream. The flatboat, which was for many years an important means of transporting downstream traffic, was a roughly built boat with strong perpendicular sides and a flat bottom. When it

¹Hall, *The West: Its Commerce and Navigation*, 112.

²Hulbert, *Historic Highways*, IX, 123-124, quoting Collins, *Historical Sketches of Kentucky*.

³Speed, *The Wilderness Road*, 66. For a description of the various styles of boats on the Ohio and for navigation down that stream see Flint, *Recollections of the last Ten Years in the Valley of the Mississippi*, 13.

⁴Cf. *The Centinel of Northwest Territory*, I, No. 1, 1793-94.

⁵Hall, *The West: Its Commerce and Navigation*, *passim*.

reached its destination it was used either to construct buildings of one kind or another for the new settlers who had traveled on it, or was sold to some other settler for a similar purpose.

Marietta was early made a clearance port. An amusing incident connected with this fact happened in 1806, when a ship cleared from this port with a cargo of pork and flour. At New Orleans this cargo was exchanged for one of cotton and the boat then sailed for St. Petersburg. When her clearance papers were examined at St. Petersburg and it was found that they had been made out at the unknown port of Marietta, they were declared forgeries and the ship was forthwith seized. After minute explanations and retracing the route on the map in order to locate Port Marietta, the ship was released. When an emigrant to the West reached Pittsburgh, Wheeling, or Brownsville, the three main points of embarkment, he secured a boat. Boat-building for family and trading purposes early became an important industry at the above places.

The traders first used a canoe to carry their small stock of cider, brandy, whisky, groceries, and dry goods, but later arks were used. These were usually loaded at Pittsburgh and started down the river. The arrival of a traveler at a settlement was a matter of great rejoicing, for he not only brought to the settlement the luxuries of the East, but he was also the newspaper of these times. A family boat was from 30 to 40 feet long and cost from \$1 to \$1.25 per foot, although this sum did not include the cost of a cable, a pump, and other requisities, which made the total cost about \$50. Wheeling was the safest point from which to embark during the low stage of the river, although it did not offer so good a market in which to purchase boats and family supplies as did Pittsburgh, nor was it as accessible from the East until the Cumberland Road was built.

From February to June and from October to December were the best seasons for the navigation of the Ohio River, although in the former season the floating ice often made the trip dangerous. Head-winds were another frequent source of trouble. The river was so crooked that a favorable wind might, within an hour, become an unfavorable one, and these contrary winds, contending with a strong current, were not unlikely to drive the boat ashore. Boats sometimes passed from Pittsburgh to the mouth of the Ohio in 15 days, and usually 10 of these days were used in reaching the falls at Louisville. However, it was not unusual for a boat to be 2 weeks in reaching even Limestone, Kentucky. Much depended upon the condition of the river and the character of the weather which prevailed. Keel-boats soon came into extensive use, since they were stronger, more rapid, and drew less water than did the other boats. These keel-boats made two or three trips up and down the Ohio and Mississippi each year, and their crew soon acquired such a knowledge of the obstacles to be met in navigat-

ing the Ohio and such skill in avoiding all dangers that many families and merchants preferred to intrust themselves and their goods to the crews of these keel-boats rather than to purchase boats at the up-river points. Much loss of life and property resulted in this early period through ignorance of the stream and through failure properly to load and to sail the boats.

The first marked improvement in the character of the boats was the introduction of the barge. The barge had a capacity of 50 to 100 tons and made annually two trips between New Orleans and Cincinnati or Pittsburgh. The barge usually had two masts, and its chief reliance for movement was a large square sail set forward, which, when the wind was in the right direction, could be used to move the boat. If the weather conditions were not favorable, oars were used to facilitate the movement of the boat. Even then, descending was easy as compared with the difficulties of ascending the river. Rowing was of little use in going upstream if the current was strong, in which case several other methods were used. One expedient was the *cordelle*, which consisted of tying one end of a rope to the vessel and carrying the other end to the banks of the river, along which the boatman walked and pulled the boat. Another way was by "warping," for tow-paths along the banks were not always found. In warping, the yawl was sent out with a coil of rope, which was fastened to a tree along the shore or a snag in the river, and then the men on board pulled the boat up to this point, when another coil was fastened to a point farther ahead, to which the boat was drawn, and so on laboriously upstream. At other times "setting poles" were used. In such cases one end of the pole was placed firmly in the bed of the stream, and, by leverage, the vessel was pushed forward. This was a very common method on the Ohio River, where the river bottom was more solid than on the Mississippi. These methods of movement now seem very crude and expensive, yet they continued in use until the introduction of the steamboat on the Ohio and the Mississippi. The barges affected almost immeasurably the production of the Ohio region, for they reduced the freight charges from New Orleans to Cincinnati as much as \$5 to \$10 per hundred pounds. After their introduction most of the groceries, instead of coming from the East, Philadelphia, and Baltimore, came from New Orleans, since groceries and other related products constituted a light return cargo.¹

To aid immigrants and other travelers in descending the Ohio, there was published at Pittsburgh in 1801 a handbook called the *Navigator*, giving directions for navigating the Ohio and Mississippi. The publishers of the book were most sanguine and assured the readers that such was the excellence of the country that in a few years there would be one continuous village along the Ohio.

¹See Gephart, *Transportation and Industrial Development in the Middle West*, 64.

BOAT-BUILDING ON THE OHIO.

The first boats built in the Ohio Valley were constructed in 1797, at a point near Pittsburgh, and they were intended for the transportation of troops and provisions for the Government. The first craft of burden regularly employed seems to have been owned and operated by a French firm, Tarascon, Berthoud and Company, of Philadelphia.¹ The possibilities of ship navigation on the Ohio were investigated in 1799 by this firm. The results being favorable, "a large wholesale and retail store and warehouse, a shipyard, a rigging and sail loft, an anchor-smith's shop, a block manufactory, and in short everything necessary to complete vessels for the sea" were established. The schooner *Amity*, of 120 tons, and the ship *Pittsburg*, of 250 tons, were built in 1801. The former was loaded with flour and sent to St. Thomas, and the latter, also loaded with flour, was sent to Philadelphia and thence to Bordeaux. Wine, brandy, and other French goods composed the return cargo, part of which was sent to Pittsburgh in wagons at a cost of 6 to 8 cents per pound. Other vessels were built in 1802, 1803, and 1804.²

From 1802 to 1805, 4 ships, 3 brigs, and 3 schooners were built at Pittsburgh.³ According to Michaux, the inhabitants of Marietta were the first who conceived the idea of exporting the products of the country directly to the Antilles by a vessel constructed in their own town, which they sent to Jamaica.⁴ By 1805 not less than 2 ships, 7 brigs, and 3 schooners had been built and rigged by the citizens of that place. As soon as ship-building at Marietta began in 1800 the farmers along the Ohio and Muskingum Rivers began to raise hemp, and soon more cordage was being manufactured than was required for home needs and large quantities were sent to the Atlantic cities.⁵ Michaux states that boats for conveying flour to lower Louisiana cost about 100 barrels of flour and were navigated by 5 men, of whom the conductor received 100 piasters for the voyage and the others 50 each. Nearly all the embarkations took place from Louisville and 30 to 35 days were required to New Orleans. Part of the men returned to Lexington by land, a journey of 40 or 45 days and exceedingly laborious. Others returned by sea to New York or Philadelphia and from thence to Pittsburgh and descended the Ohio to Kentucky.⁶

EARLY COMMERCE ON THE OHIO AND THE MISSISSIPPI.

As early as 1779 the importance of the Ohio River as an agency in developing the interior part of the country was pointed out by an English engineer who made a thorough examination of the western country, and reported on it in an address sent to the Earl of Hillsborough, Secretary of State for the North American Department.

¹Hulbert, *Historic Highways*, IX, 132-133; cf. Craig, *History of Pittsburg*, 284-285.

²James, *Ohio in 1788*, p. 84, quoting from *The American Pioneer*, I, 307.

³Craig, *History of Pittsburg*, 287.

⁴Michaux, *Travels to the Westward of the Alleghany Mountains*, 110.

⁵James, *Ohio in 1788*, pp. 84-85, quoting *The American Pioneer*, I, 90.

⁶Michaux, *Travels to the Westward of the Alleghany Mountains*, 224.

This address described the superior importance of the stream in developing the country, and recommended special attention to it and the contiguous territory. The products of the region, it was noted, were the much coveted "naval stores," such as corn, flour, beef, hemp, and tobacco, all of which could be floated down the Ohio to sea in large quantities much more cheaply than they could be brought out by the overland route. Similarly, the Ohio would offer the cheaper route for manufactured articles imported from Europe into the Ohio country.

On the great rivers the canoe as a means of transport gave way to the Mackinaw boat, carrying from 15 hundredweight to 3 tons, which in turn was succeeded by the keel-boat or barge of 30 to 40 tons. The first appearance of a keel-boat on the Mississippi above the mouth of the Ohio seems to have been in 1751, when a fleet of boats, commanded by Bossu, a captain of French marines, ascended to Fort Chartres. This was the first enterprise to ascertain by experience something of the navigation of the Mississippi.

Up to the period of the Louisiana purchase in 1803, and even until a later date, trading in furs was the leading pursuit of the Mississippi Valley, especially of the upper portion. The average annual value of the fur trade of upper Louisiana for 15 successive years ending in 1804 amounted to \$203,750. Some lead, salt, beef, and pork also were exported. Indian goods came in from Canada, goods for domestic consumption from Philadelphia and Baltimore, groceries from New Orleans, and hardware from the Ohio River in small boats.

By 1770 the exports of New Orleans and the Mississippi Valley, mainly furs, skins, indigo, and lumber, had increased to \$631,003 per year. In 1778 the merchants of New Orleans, who had been previously compelled to ship all their products to Spanish ports, were granted the privilege of sending each year a certain number of shiploads of goods to France. This grant marks the opening of the Mississippi to the commerce of the world. During the Revolutionary War the United States had stationed in New Orleans an agent for the purchase of guns and ammunition for the Continental forces and for shipment of these munitions up the river to Pittsburgh and thence overland to Philadelphia. In 1788 the settlers in Kentucky and Tennessee were shipping a large quantity of produce down the Mississippi, amounting to some \$225,000 a year. In 1795 the river was opened for three years free to the Americans, with the result that trade rapidly increased, so that by 1798 receipts of produce from the American settlements on the Ohio amounted to \$975,000, with an annual increase of \$300,000. Again the Mississippi was closed for a time, but in 1803, by extension of territory, it was brought entirely within the jurisdiction of the United States.¹

¹See *Secret Journals of Congress*, IV, 301-338, for "Report on difficulties in the Mississippi Valley," on account of the refusal of Spain to allow the navigation of the Mississippi River and on account of the seizure of the goods of certain persons, American citizens, by the Spanish.

Many instances may be cited of the devious routes followed by early commerce. It appears, for example, that flour manufactured in the region west of Pennsylvania was sent in large quantities and at great cost by land to Philadelphia and thence by sea to South Carolina and eastern and western Florida, where little or no grain was grown. The passage from Philadelphia to Pensacola required nearly a month and the cost of transport was ordinarily 5s. a ton (16 barrels of flour). Boats carrying 500 to 1,000 barrels of flour moved from Pittsburgh to Pensacola in nearly the same time and at half the expense. The flour, wheat, beef, planks for ship-building, hemp, tobacco, iron, etc., of the West could find better and cheaper transportation by the Ohio than overland by the eastern coast cities. It was asserted, however, that by means of water communication and a very short transport by land the productions of the Ohio Valley could be conveyed at a much lower price to the seaport of Alexandria on the Potomac than merchandise could be carried from Northampton to London.¹ As early as March 1783, Daniel Broadhead opened at Louisville a store of goods brought by way of the Ohio from Philadelphia.² The transactions of General James Wilkinson down the Ohio and Mississippi Rivers, in 1788, 1789, and 1790, included tobacco, butter, lard, hams, flour, tallow, beef, pork, bacon, and other articles.³

In a letter from a gentleman at the Falls of the Ohio to a friend in New England, December 4, 1786, conditions in the West are thus summed up:

"Though this country has been settling but about six years, and that in the midst of an inveterate enemy, and most of the first adventurers fallen a prey to the savages, and although the emigration to this country is so very rapid that the internal market is very great, yet the quantities of produce they now have on hand are immense. Flour and pork are now selling here at 12s. the hundred; beef in proportion; any quantities of Indian corn can be had at 9d. per bushel. Three times the quantity of tobacco and corn can be raised on an acre here than can be within the settlement on the east side of the mountains, and with less cultivation. It is, therefore, rational to suppose that in a very few years the vast bodies of waters in those rivers will labor under immense weight of the produce of this rich and fertile country, and the Spanish ships be unable to convey it to market. Do you think to prevent the emigration from a barren country, loaded with taxes and impoverished with debts, to the most luxurious and fertile soil in the world? Vain is the thought and presumptuous the supposition. You may as well endeavor to prevent the fishes from gathering on a bank in the sea which affords them plenty of nourishment."⁴

In moving the surplus product of the Ohio region to market, traffic increased largely on the western streams, an endless variety of small craft, rude arks, and barges, together with a few sea-going vessels, being utilized.⁵

¹James, *Ohio in 1788*, p. 69.

²Butler, *An Appeal from the Misrepresentations of James Hall respecting the History of Kentucky and the West*, 29.

³*American State Papers, Miscellaneous*, II, 119.

⁴*Secret Journals of Congress*, IV, 321.

⁵Monette, *History of the Discovery and Settlement of the Mississippi Valley*, II, 201.

LAND ROUTES.

Many of the important Indian trails and the early roads, such as Braddock's and Boone's, had their termini at the Ohio River. The difficulties encountered in travel and transportation by land routes seem to have been greater than those experienced in navigation of the Ohio. The old military roads and other roads constructed by the Government had been neglected and had degenerated until in many cases only a vestige of them remained. When, however, these roads, along with certain Indian trails, had been restored by occasional travel, they formed the basis of the most important land routes to the new country. For some time they were of greater relative importance as routes of travel than were the waterways, but when a better knowledge of the difficulties of the streams was obtained, and improvements had been made, the water ways rapidly grew to be more important than the land routes.

THE STEAMBOAT AND INDUSTRIAL DEVELOPMENT OF THE WEST.

In 1811 the first steamboat descended the Ohio River from Pittsburgh to New Orleans, an event that was due to the perseverance and courage of Nicholas J. Roosevelt.¹ The success of Robert Fulton's steamboat on the Hudson and other earlier steamboats on different waters of the country did not by any means prove that this style of boat would be successful on all inland bodies of water, and especially on the Ohio River, which had many muddy and whirling currents, dangerous channels, snags, islands, and rocks. Roosevelt was authorized by Livingston and Fulton to make an investigation of the currents and conditions of the Ohio and the Mississippi Rivers, and if he thought that they were suited to steamboat navigation, these men agreed to supply the capital for the construction of the boat. Roosevelt descended the rivers in 1810 and stopped at towns and settlements along the streams in order to discuss the project with the settlers and rivermen, but from neither class did he receive much encouragement. They considered the project decidedly visionary on account of the currents and obstacles to navigation in these rivers, and were quite certain that the falls at Louisville and other numerous obstructions in the Ohio River would prevent the use of the steamboat on this stream. However, so sanguine of success was the investigator that he stopped at various points along the Ohio River to open coal-mines and to pile up coal along the banks of the river for the use of the steamboat, which he felt certain would soon descend this stream. His report was duly made and readily accepted by Livingston and Fulton, who thereupon authorized him to go to Pittsburgh to build a boat.

This boat was 116 feet long and cost about \$38,000. The people of Pittsburgh with doubts and misgivings watched the boat depart

¹See Latrobe, *First Steam-boat Voyage on the Western Waters.*

on its journey downstream and Roosevelt encountered the same state of mind wherever he was received and entertained at points along the rivers. The people could not deny that the boat was moving, but this was downstream, and the boat did no more than rafts. They felt quite certain that it could not go upstream. At Louisville, where Roosevelt was compelled to stop a month to await the rise of the river so that he might pass over the falls, he invited a number of citizens on board and steamed up to Cincinnati and returned, in the hope of dispelling the last doubt of the people. Doubtless many of the people thought it really too good to be true, for they had been waiting many years for a solution of their transportation problem. Although the soil had long invited them to large production, they had often seen the fruits of their labor go to waste for lack of a market, and the promise of this rapid and easy means of shipping goods in either low or high water seemed to many too unreal. The seemingly unreal did in time prove true, yet, so far as the large industrial and commercial interests of Ohio were concerned, it was to continue an unreality for almost a decade. This was due to the fact that the falls at Louisville made impracticable the use of steamboats to Pittsburgh until greater traffic between these points had developed. This very fact, however, caused measures to be taken for the construction of a canal around these falls. Even before the canal was completed, steamboats were plying between Pittsburgh and Louisville and intermediate points. The through route from Pittsburgh to New Orleans was generally divided into two sections, viz, Pittsburgh to Louisville, and Louisville to New Orleans. It might be supposed that, when this method of transportation was introduced, the rafts, flatboats, and barges would cease to be used; but the immediate result was just the opposite, for their numbers increased. This was a natural consequence of the great increase in production which was now made possible by the reduced cost in reaching a market. Greater quantities of the old products and a rapid increase of new ones resulted. Flour, pork, corn, whisky, cider, potatoes, lumber, coal, iron, and wheat began to move down the river in large quantities. The passenger fare from Pittsburgh to New Orleans was \$60 in 1800, and the freight rate was \$6.75 per hundred pounds for general merchandise, but this was decreased by more than one-half when the steamboat was introduced.¹ Needless to say, not all these results followed at once the experiment of Roosevelt in 1811.

The first boat had two masts, for the builders expected to use sails.² The second boat, the *Comet*, was built on a plan for which French had obtained a patent in 1809, but after making a trip to Louisville in

¹*Liberty Hall and Cincinnati Gazette*, June 24, 1816.

²See Lloyd, *Steamboat Directory and Disasters on Western Waters*, *passim*.

1813, and New Orleans in 1814, this boat was taken apart and her engine was placed in a cotton factory. This was partly because her machinery had not proved successful and partly because of the enterprise of Livingston and Fulton in securing and enforcing their monopoly of using steamboats on the lower Mississippi. The *Vesuvius* was built by Livingston and Fulton in 1814 and was used on the lower Mississippi. The *Enterprise* was constructed in the same year under the patent of French and ascended from New Orleans to Louisville in 25 days, but, as the river was so high that "cut-offs" were used to evade the current, the people were not yet convinced that steamboats could be commercially used for the up-river traffic. The *Washington* appeared in 1816 and brought about a change in conditions. This boat was built under the supervision of Captain Henry Shreve and differed from the former boats in several important particulars. The *Washington* had two decks, with the cabin placed between them, and the boilers were on the deck instead of in the hold. Instead of upright stationary cylinders, as in Fulton's engine, or vibrating cylinders as in French's engine, the *Washington* had her cylinders placed in a horizontal position, with a vibrating pitman. Livingston complimented Shreve very highly, but assured him that their monopoly would drive him out of business, as in time it did. In 1817 the *Washington* made the trip from Louisville to New Orleans and return in 41 days. From this date the era of steamboat navigation on the Ohio and Mississippi Rivers really begins.

Many people thought at first that steamboats would be confined to towing other boats and carrying passengers. The people soon realized that flatboats and barges would continue to be used, since they could transport on the down-river trip many times the tonnage of the early steamboats. There was also much dispute over the question as to which inventor was entitled to patent rights on steamboats. It was uncertain whether this honor belonged to Fulton, Fitch, or Evans. The legislature of Ohio was petitioned in 1816 to pass a law which would provide that the State would defend any of its citizens against prosecution and would pay all costs for damages incurred in using patent rights on steamboats until the right to the patent was determined.¹ Feeling became very bitter against "any quack" who could secure the right to monopolize what was almost "a public necessity to the people of a large section of the country."² Meanwhile, notices were published in the newspapers by the different claimants of the patent rights which warned all intending builders of steamboats to secure permission from this or that individual, if they did not wish to subject themselves to prosecution for infringing these patent rights. The enterprising company of Livingston and Fulton secured from the

¹*Liberty Hall and Cincinnati Gazette*, March 4, 1816.

²*Western Spy*, March 4, 1816.

State of Louisiana the exclusive privilege of navigating the waters of that State with boats moved by steam. The charter provided among other things that certain fixed rates for freight and passengers should be charged. The situation then was that the owner of a boat must pay a royalty to Livingston and Fulton, if he operated a steamboat on the Mississippi, since if the shipper could not reach the only available market—New Orleans—it was useless to place the boat on the river. Even if the royalty was paid he ran the risk of being prosecuted by one of the rival claimants. As a result of this hindrance and that of the falls at Louisville, Ohio received but little service from the steamboat for a number of years.

Livingston and Fulton placed on the river the number of boats which would bring them the largest net return on their investment, and, if others desired to place steamboats on the river, the sheriffs of Louisiana seized them, and Livingston and Fulton prosecuted the owners of the boats for infringing their State-granted privileges.

The general assembly of Ohio, in 1816, passed a resolution which stated that inasmuch as the people of the State of Ohio had been deprived of the advantages of steamboats on account of certain disputes, the Senators and Representatives of Ohio should use their influence to obtain a "legal exposition" of these conflicting claims, and, further, that inquiry be made as to the right of Louisiana to grant such exclusive rights as had been given to Livingston and Fulton.¹ It was felt that Louisiana by her act had greatly injured the commerce of her sister States, for she had practically closed the Ohio and Mississippi to steamboat navigation. So many were the complaints of alleged injuries which had resulted to the people of the Ohio and Mississippi Valleys, and so frequent had become the official remonstrances, that Louisiana appointed in 1817 a commission to investigate the advisability of revoking the charter of Livingston and Fulton. This committee in its report emphasized the heavy losses which had been incurred by Livingston and Fulton through the wrecking and the burning of the first and the second steamboats placed on the river, the zeal of the company in building new boats, the low fares resulting from the use of these boats, and the fidelity with which the company had observed the terms of the charter.² It further pointed out the advantages to the people of Louisiana from having a monopoly of the steamboat carrying-trade of the West. The report said:

"Have we not every reason to hope, that in a few years hence we shall have a sufficient number of them [steamboats] to allow us to carry on with the western States a trade which can not fail to be extremely advantageous to us. Nobody can entertain a doubt that if the number of steamboats were sufficient to enable us to supply regularly the countries situated on the western streams, those countries would soon abandon their connections with the Atlantic States

¹Ohio, *Senate Documents*, 1816.

²Cf. Louisiana, *Report of the House of Representatives*, June 18, 1817.

and draw all their wants exclusively from New Orleans. The specie which the people of the western country carry home and send afterwards to the northward would remain here."

Lack of specie in the West was indeed a serious hindrance to commerce, and complaints were often made when it was sent out of the States, for each section begrudged every other section any specie which it had to give up. Since the company was strictly obeying the terms of its charter, and since nothing but gain was resulting to the people of Louisiana, there appeared no reason for the legislature to repeal the grant, even if the advantage to this State was secured at the expense of many other regions. The legislature therefore adopted the report without a dissenting vote. This called out from other States along the Mississippi and Ohio Rivers a protest that this was an arbitrary use of power and an infringement of the rights of other States. These States denied the right of Louisiana to prohibit them from using their natural passageways to the ocean, for it amounted to this, since "the legislature might as well have extended the restriction to a total interdict of the navigation of the Mississippi within the border of the State or shut the port of New Orleans against us."¹

Since the legislature had thus determined its course of action, relief was sought from the courts. The *Washington* was seized by the sheriff upon a warrant from Livingston and Fulton, and the case was tried in the district court of Louisiana in 1818. This court decided that Louisiana had no right to grant such a privilege; but before this case reached the Supreme Court, the New York case of *Gibbon vs. Ogden* had been decided in 1824. This case was of such importance in its effect on transportation that a brief summary is given.²

The legislature of New York had also granted to Livingston and Fulton the exclusive privilege of navigating all waters within the jurisdiction of that State with boats moved by fire or steam. Livingston and Fulton had assigned their rights to Ogden. Gibbon was the possessor of two steamboats. Ogden secured an injunction to prevent Gibbon from using the boats, which the latter claimed were licensed under the act of Congress providing for the licensing of ships and vessels employed in the coasting trade and fisheries. Inasmuch as the Gibbon boats operated between Elizabethtown, New Jersey, and New York City, he claimed the right to use them under the clause of the Federal Constitution which gives Congress the right to regulate commerce between States. The lower courts held adversely. Connecticut had granted a similar privilege. New Jersey by an act provided that, if any citizen of that State were restrained by the New York act, he should be entitled to an action for damages in New Jersey with treble costs against the party who thus restrained him. Georgia had made similar grants in 1814, Pennsylvania in 1813, Massachusetts in

¹*Liberty Hall and Cincinnati Gazette*, Nov. 17, 1817.

²*Wheaton*, 1.

1815, and New Hampshire in 1816. In 1822 Ohio passed a retaliatory measure against New York. This prohibited any owner of a boat moved by steam or fire under patent or ownership of Livingston and Fulton from landing any passenger on the shores of Lake Erie, except in case of life being endangered and except when the privilege of navigating the waters of Lake Erie that were in New York State had been granted to citizens of Ohio. A fine of \$100 for each and every passenger on the boat was fixed as the penalty for disobeying this act.

These acts indicate the general confusion resulting from the conflicting claims and the growing commerce that was made possible by the use of steamboats. The boats were suited to make long interstate voyages, but each State wished to reap all the advantages of their use. Webster, in his argument for the defendant, said that one of the chief powers granted to the National Government was the regulation of commerce between the several States and foreign nations. It was intended that the commerce of the States should be a unity, and to secure this unity it would be necessary for the National Government to establish a uniform and complete system of regulation. This was being attempted by the States in question, and again the defendant was clearly within his rights by the congressional act which licensed ships engaged in the coasting trade and fisheries. For these two reasons no act of the National Government establishing a uniform system of regulating commerce was necessary to make the New York act null. It was void from the beginning, for it could not be assumed that the State had a right to exercise a power which was granted to the Federal Government, even if the National Government had not yet exercised its right.

The argument of appellant was based on the following points: First, that the grant was not opposed to that clause of the Constitution which authorized Congress to regulate commerce; second, that it was in keeping with that other clause which authorized Congress to promote the progress of science and useful arts by the granting of patent rights and copyrights; and third, that the State had concurrent powers with the National Government.

Chief Justice Marshall held for the court that the laws of New York granting these rights to Livingston and Fulton were in collision with the acts of Congress regulating commerce and that the State law must yield to the supreme law. This decision was handed down in 1824, and the steamboat industry began to develop immediately, although Livingston and Fulton had practically abandoned their monopoly on the Mississippi and Ohio in 1820.

The fact that the steamboats reduced the time from New Orleans to Pittsburgh from 100 to 30 days made possible a wider market and a great increase in the production of the regions. Steamboats in 1820 began plying between Pittsburgh and Louisville and other intermediate

points.¹ Although steamboats were not very numerous on the Ohio and Mississippi before 1818, they accelerated the trade and industry of that region.

The situation in 1815 was expressed as follows:

"The improvement of our barges and steamboats insure within two years the total supply by the Mississippi and Ohio Rivers of many articles which are now wagoned from Baltimore and Philadelphia and our exports will be then commensurate with our imports. Our flour, pork, tobacco, and whisky will return in calicoes, hardware, coffee, cotton, sugar, bartered for at New Orleans. There was never such a prospect for improvement and trade at one time on any portion of the globe as that which is now exhibited to western America. Ohio has acquired celebrity during the war which has pushed her forward in wealth and population."²

The commercial and industrial advantages of the Ohio country were made known by the general advertisement which the region secured during the war, and this produced favorable conditions for a period of great commercial and industrial activity, which immediately succeeded. The people of Ohio were urged to improve the Ohio River before the channel of trade was turned in another direction, as in a measure it was, after the Erie and State canals were completed.³ In 1819 there were 60 steamboats plying between New Orleans and Louisville, for as yet they did not reach Cincinnati and Pittsburgh except in the few cases when the river was in a flood stage and they could pass over the falls.⁴ Cincinnati began to build steamboats in 1819, and a few were constructed at other points along the Ohio. Most of the boat-building took place at Pittsburgh on account of the iron, lumber, and established manufactures, which gave her the lead in ship-building.

Table 21 shows the number of boats built in different years on the Ohio. It will be observed that the number began to increase after 1818, when the monopoly powers of Livingston and Fulton were weakened.

TABLE 21.

1811.... 1	1816.... 3	1819....34	1822....13	1825....27
1814.... 1	1817.... 7	1820....10	1823....15	1826....56
1815.... 2	1818....25	1821.... 5	1824....16	1827....36

The early losses suffered by fire and sinking were very heavy, for previous to 1826, 41 per cent of all the steamboats constructed had either been lost or destroyed, and 28 per cent of these losses were due to other causes than fire—a sad commentary on the obstructions to navigation in the Ohio and Mississippi Rivers. The inland rivers of the State were not navigable for steamboats, with the exception of the Muskingum, which after some improvement was often used by this class of boats. Zanesville was a center, not only for agricultural

¹*Liberty Hall and Cincinnati Gazette*, May 17, 1820.

²*Telegraph* (Brownsville), Aug. 14, 1815.

³*Liberty Hall and Cincinnati Gazette*, Aug. 21, 1815.

⁴*Ibid.*, March 30, 1819.

products, but also for many manufactured goods, among which iron products were especially important.

It was not until 1818 that the first steamboat appeared in Cleveland, which at this time had no harbor, except for very small craft. In 1822 a schooner of 44 tons was built there and her first cargo was a load of provisions for the garrison at Mackinac. In 1824 the first steamboat was built at an Ohio port on Lake Erie. It will be observed how much later the trade and industry in the northern section of the State developed, for at this time there were on the Ohio River hundreds of vessels, including steamboats, which transported thousands of tons of produce from the southern and central regions of the State to southern markets. The report of the collector of the port of Cleveland showed that in 1809, between April and October, the months in which most of the trade was carried on, the receipts of goods amounted only to \$50. In the same year the collector's report from the Maumee District showed that there were sent out \$3,000 worth of raccoon, bear, and mink skins. This indicates the absence of developed industrial life.¹

When the Erie Canal was completed, the State canals and some State highways constructed, and the canal around the falls at Louisville built, Ohio began to furnish more products for the steamboats than they could carry, and the agitation commenced with renewed vigor for the improvement of the Ohio River. The improvement of this river would mean that the improved boats, which had the great merit of cheapness, could be used throughout the year.

ECONOMIC PROGRESS AND DEVELOPMENT OF TRAFFIC ON ROADS AND WATERWAYS.

In 1794 the Government assumed the carriage of mails between Wheeling and Cincinnati, and for that purpose a line of mail-boats was established. In 1798 better boats were employed.

The value of the down commerce of the Mississippi, 1801-1807, is given in table 22.²

TABLE 22.

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	<i>tons.</i>			<i>tons.</i>	
1801	38,325	\$3,649,322	1805	.....	\$4,371,545
1802	45,906	4,475,364	1806	.....	4,937,323
1803	49,960	4,720,015	1807	.....	5,370,555
1804	.....	4,275,000			

The tonnage upstream on the Mississippi was barely 10 per cent of that down; on the Ohio, however, with a current less strong, the volume of upstream traffic was relatively greater. There were about 50 boats

¹Whittlesey, *Early History of Cleveland, Ohio*, 427.

²*Report on Internal Commerce of the United States, House Ex. Doc. No. 6, 50th Cong., 1st sess., XX, pt. ii, 181.*

plying between Cincinnati and Pittsburgh, carrying 30 tons each, and making 6 trips a year. Imports were brought to New Orleans from France and Spain, and distributed among the towns and planters by barges, pirogues, and plantation boats. The flatboats going down river carried cargoes averaging in value from \$2,000 to \$3,000. Their owners returned, in the early years of the century, usually by way of Baltimore or Philadelphia, and, making purchases in these cities, arrived home in time to raise another crop.

By 1806, flour, staves, cordage, cotton, hemp, and other products were conveyed on vessels of considerable burden, built and freighted on the upper Ohio, to the "Islands" and to different parts of Europe. In 1804 or 1805 merino sheep were introduced into Washington County, Ohio, destined, with other counties in eastern and southern Ohio and western Pennsylvania, to become famous for the quality of wool raised there.¹

Reference has been made above to the driving of live-stock from the West to Philadelphia and Baltimore. It was estimated that in the autumn of 1810, 40,000 swine were driven from Ohio to Philadelphia, Baltimore, and other eastern markets, while during the War of 1812 vast numbers were driven to Detroit and other military posts in that quarter.² This practice began as early as 1800, live-stock constituting the first surplus product. The great feeding-grounds were at first along the Potomac, but after 1810 the cattle-raising industry moved west into Kentucky. Cattle continued to be marketed in that manner up to the close of the period, but hogs were slaughtered and the dressed products shipped down the river. In 1819 two merchants of Marietta were said to have put up 33,000 pounds of lard, 30,000 pounds of pickled pork, and 45,000 pounds of bacon from swine raised chiefly in the immediate vicinity. Both beef and pork sold at \$5 per hundred-weight.³

In 1810 manufactures in Ohio amounted to nearly \$2,000,000. Cincinnati had made rapid growth. A lot that was sold in that city for \$4 in 1788 sold 18 years later for \$50,000.⁴ Cincinnati, however, and other towns in the western country, were at this time said to be suffering much from decline in business.⁵

Louisville, on account of the obstruction of the falls, was an entrepôt for goods arriving from New Orleans and intended for the country above. A canal had been long contemplated around the falls, but a doubt existed as to whether it would prove remunerative and also as to whether it might not injure the trade of the place, and these reasons operated to prevent carrying out the project.

¹Hildreth, "Observations on the Climate and Productions of Washington County, Ohio," in *American Journal of Science and Arts*, XII, 210, 1827.

²Kilbourn, *Ohio Gazetteer*, (1819), p. 13 *et seq.*

³Hildreth, "Notes on Ohio," in *American Journal of Science and Arts*, X, 321-322.

⁴Mills, *Inland Navigation*, 81.

⁵Flint, *Letters from America*, 211.

An active commercial spirit seems to have developed in Kentucky by 1820.¹ The price of working-horses was \$100 to \$120, and of fine saddle-horses, \$200 to \$300. Wheat was worth 75 cents to \$1, rye 50 cents, oats 33⅓ cents, potatoes 33⅓ cents, flour \$3 per hundred pounds, beef 5 to 6 cents, pork 4 to 5 cents, mutton 3 to 4 cents, butter 25 cents, cheese 18 cents, wool 33⅓ cents. The manufactures of hemp in Kentucky in 1811 were valued at \$500,000.² Prices in Ohio were about the same, butter and cheese being somewhat lower in price. The price of labor on the farm in Ohio was about \$12 per month by the year, and the wages of mechanics generally about 50 cents higher than in eastern States.³ There was considerable dairying, some farms making as much as 6,000 or 8,000 pounds of cheese; these dairy products were usually shipped to Louisville. Fruit was an important product, and cider was made in great quantities.

For purposes of comparison, the following prices in western New York about 1800 may be cited: wheat 62 cents to \$1, corn 37 to 50 cents, rye 50 to 62 cents, hay \$6 to \$12 per ton, butter and cheese 10 to 16 cents, yoke of oxen \$50 to \$80, milch cows \$16 to \$25, cattle for driving \$3 to \$4 per hundredweight, team of good working-horses \$100 to \$125, sheep \$2 to \$4, freshly killed pork in winter \$4 to \$6 per hundredweight, salted in spring \$8 to \$10, whisky 50 to 75 cents per gallon, salt \$1 per bushel of 56 pounds, field ashes 4 to 9 cents per bushel, wages of a common laborer \$10 to \$15 per month and board, suit of clothes \$4 to \$5, pair of shoes \$1.75 to \$2.⁴

Robert Mills stated in 1820 that goods could be brought from New Orleans to any part of the valley of the Ohio for \$2.50 to \$3 per hundredweight, while transportation from Baltimore to Philadelphia cost \$7 to \$8. New Orleans was not the exclusive trade center, for two reasons: (1) the superior capital and commercial character of the eastern merchants; (2) because there was on the Ohio River no depot at which traders of small resources could obtain goods; they were forced to a distant market, but they were dependent on immediate profits and dared not risk a voyage to New Orleans when an accident to the steamboat might occasion the loss of a season. Capital was, however, rapidly accumulating along the Ohio River.⁵

It was claimed about the close of the period that if the canal through New York were finished, and canals constructed through Ohio, two-thirds of the surplus produce of the country on the Ohio and streams above the falls would go to New York, which was a better market than New Orleans. The produce lost on the way to the latter place in 15 years would, it was asserted, build a canal across Ohio. After the spring

¹Mills, *Inland Navigation*, 81.

²*Hunt's Merchants' Magazine*, XII, 461, May 1845.

³Hildreth, "Notes on Ohio," in *American Journal of Science and Arts*, X, 322.

⁴*Documentary History of New York* (ed. by O'Callaghan), II, 688-689.

⁵Mills, *Inland Navigation*, 82.

floods, when vast quantities of produce were floated down the Ohio and Mississippi, there was a regularly recurring glut and consequent low prices.¹

According to Kilbourn's *Gazetteer of Ohio* (1819), the products of the northern and of many interior counties frequently went to Montreal and to New York markets via Lake Erie, while the products of the southern two-thirds of the State were boated down the Ohio to New Orleans, though a part ascended to St. Louis and other places on the upper Mississippi. It was estimated that 10,000 barrels of flour were exported from Pickaway County, Ohio, in 1817. Lead was brought from St. Louis to Pittsburgh and cotton from Tennessee at 4 cents per pound, and that superfluous transportation existed is proved by the fact that salt was sent from the Great Kanawha region to Pittsburgh.²

The trade of Michigan Territory was already very considerable and rapidly increasing. The fisheries were valuable and thousands of barrels of whitefish were taken in the fall and prepared for the home and foreign markets. Beyond local business and traffic with Indian tribes, there was considerable business with upper New York, Pennsylvania, and Ohio, while Detroit was said to be a central situation for the fur trade in the Northwest. Commerce in Illinois was making small progress about 1820.³

Birkbeck stated in 1827 that sugar-cane was cultivated with success in Louisiana and that cane-sugar was brought up the river in large quantities at a cheaper price than the cost of sugar derived from the sugar maple, which had previously been the chief source of supply for Kentucky, Ohio, and Indiana. The latter sold at 25 cents per pound.⁴ The demand for grain, he thought, would be fully equal to the product for some years, owing to the influx of new settlers, but vast quantities of beef and pork were shipped from Kentucky and Indiana to New Orleans.⁵ Tobacco, flour, and hemp were also exported from Kentucky, 25,000 hogsheads of tobacco being exported from that State in 1818. In 1819, 40,000 to 50,000 tons of produce were estimated to have passed the falls at Louisville for New Orleans.⁶

The manufacture of pot and pearl ashes in Ohio was said to be considerable, while exports of flour, beef, and pork were fast increasing. Some of the latter articles were sent west to supply the new settlements, some were sent to the United States garrisons on the lake frontiers, and several thousand barrels had lately gone in one year

¹*Public Documents Relating to the New York Canals*, 460. It was further asserted that the State of Kentucky had lost more of her citizens by the Orleans trade within the last 15 years on account of disease than the loss by the late war (1812), when she bled at every pore.

²Mills, *Inland Navigation*, 81.

³Ford, *History of Illinois*, 96.

⁴Birkbeck, *Letters from Illinois*, 63.

⁵*Ibid.*, 74.

⁶*Public Documents Relating to the New York Canals*, xxiv.

over the portage at Niagara River.¹ One county of 400 square miles in southwestern Ohio had in 1819 produced 246,000 bushels of wheat, 43,500 bushels of rye, and 463,000 bushels of corn, and in 1818 sent off 4,000 hogs to market. Hogs were almost uniformly driven to the lake or to the Ohio to be slaughtered, in order to save expense in the carriage of salt pork and bacon.²

The amount of trade sent to market by way of the lakes was considerable. The authority of the principal forwarding merchants at Oswego was quoted to the effect that "for the last 11 years [preceding 1819] the average number of voyages or trips made in a year by vessels of from 40 to 100 tons between Oswego and Niagara has been at least 150, making a total in the 11 years of 1,650 trips. There has been but one vessel lost during the whole period, and that an old one."³ Goods had been lately purchased in New York, sent thence to Albany in a sloop, thence to Buffalo in wagons, thence to Huron in a sloop, and thence 105 miles into the country in wagons at a less expense than they could have been sent from Philadelphia, though requiring longer time.⁴ In 1818, at Detroit and on the United States side of Lake Erie, 51 vessels were owned, with an aggregate tonnage of 1,867 tons, and of smaller vessels 201 tons, or a total of 2,068 tons. Considerable tonnage was also controlled by the British on the same lakes. During 6 weeks in 1818 the number of boats loaded with produce and passing down the St. Lawrence averaged 15 per day.⁵ Up to the time of the American Revolution there had been little increase in the shipping on the lakes, but from that time the commerce of Lake Ontario increased and up to 1800 exceeded the commerce of all the other lakes. In 1818 there were 60 vessels on Lake Ontario carrying supplies of furs, fish, salt, lumber, staves, etc., to the settlements and military forts.⁶ The first American vessel on Lake Erie was built at Erie in 1797 and the first steam-vessel on the lakes was built in 1817, of 240 tons. The *Walk-in-the-Water*, the first steamer built on the waters above Lake Ontario, was launched in May 1813.⁷

At the close of this period traffic on the Ohio and Mississippi Rivers, which had been conveyed in boats propelled by wind or the current of the stream,⁸ began to move in considerable volume by steamboat. As distinguished from the steamboats on the Hudson River, those on the western waters were constructed with a view to carrying both passengers and freight. Birkbeck declared, however, in 1817, after calling

¹Public Documents Relating to the New York Canals, 391-392.

²Ibid., 455.

³Beach, *Considerations against Continuing the Great Canal West of the Seneca*, by Peter Ploughshare, 17.

⁴New York Canal Commissioners, *Report*, Mar. 7, 1820, in *Public Documents Relating to the New York Canals*, 393.

⁵Ibid., 390-391.

⁶Report of Internal Commerce of the United States, in House Ex Doc. No. 6, 52d Cong., 1st sess., XXVIII, pt. ii, p. ix.

⁷Ibid., 15.

⁸Rafting logs down the Ohio about 1820 was one of the great employments of that time, Hulbert, *Historic Highways*, IX, 127-129.

attention to the loading of steamboats upwards from New Orleans with dry goods, pottery, cotton, sugar, wines, liquors, and salted fish, and downward with grain, flour, tobacco, bacon, etc., that nine-tenths of the river trade was still carried on in the usual craft, *i. e.*, flatboats, barges, pirogues, etc.¹

Flint gives an animated description of the trade on the Ohio and Mississippi Rivers in 1816.² He speaks of boats laden with planks from the pine forests of southwestern New York; Yankee notions from Ohio; flour, pork, whisky, hemp, tobacco, bagging, and bale "roap" from Kentucky and Tennessee, and cotton from the latter States; cattle and horses from Illinois and Missouri, as well as with articles from Ohio; and pelfry and lead from Missouri. Some boats had corn on the ear and in bulk, as well as apples, potatoes, cider, dried fruits, spirits, and, in short, the products of the ingenuity and agriculture of the whole upper country of the West. The boats often moved in fleets. Some were especially fitted up and loaded entirely with turkeys. At New Madrid he saw a large turner's establishment floating by, and learned of another boat floating down manufacturing axes, scythes, etc., which had a blacksmith's shop on board. Other boats were floating dry-goods establishments which pushed to the shore and traded with people living along the river or coming there for purposes of trade.

Breck describes the Ohio and Mississippi River trade in 1818 as very great and fast augmenting. He estimated that there were 30 steamboats on the Mississippi and its tributary streams in that year.³ In the year ending October 1, 1816, 594 flat-bottomed boats and 300 barges arrived at New Orleans from the upper country, and in the succeeding 12 months the number arriving was 1,500 boats and 500 barges.⁴

A committee reporting on the Cumberland Road in the House of Representatives, March 23, 1816, though describing the navigation of the Ohio and Mississippi Rivers by steamboats as being in its infancy, nevertheless asserted that its success was no longer doubtful and that it was increasing with a rapidity corresponding to that success. During the last years the sugar and cotton of Louisiana had been brought up by water to Pittsburgh, and, in consequence of the extraordinary demand, had been transported thence in wagons to the Atlantic cities and sold at prices affording a profit to the owners. It was pointed out that with the advantages of steam navigation, unless the roads across the mountains were much improved, the merchants of the western country would cease to purchase goods from the importers at New

¹Birkbeck, *Notes on a Journey in America*, 151-153.

²Flint, *Recollections of the Last Ten Years in the Mississippi Valley*, 24-25.

³*Niles' Register*, XIV, 439, Aug. 22, 1818, states that there were 20 steamboats, conveying nearly 4,000 tons, trading from the upper and adjacent country to New Orleans.

⁴Breck, *Sketch of Internal Improvement Already Made by Pennsylvania*, 76.

York, Philadelphia, Baltimore, etc., and New Orleans would become the sole emporium of their trade.¹

On December 22, 1822, a committee appointed in accordance with an act of Congress, April 14, 1820, to report on the navigation of the Ohio and Mississippi Rivers, asserted that steamboats had almost superseded the use of barges, which had formerly been the largest boats in use. When a steamboat, in 1817, with a full cargo, performed the voyage from the Falls of the Ohio to New Orleans, 1,500 miles, in 7 days' work, the whole passage occupying 9 days, during 2 of which the steamer was detained by grounding on a sandbar, it was thought worthy of notice.² Palmer, while at Maysville in 1817, noted the arrival of a large barge-like boat of 100 tons, which had arrived from New Orleans, 1,730 miles below, with West India produce. The boat had been nearly 3 months ascending the river, the men, 14 or 16 in number, having to "pole" up most of the way. Boats made the same distance down in 20 or 25 days. Arriving at Cincinnati, June 29, 1817, and counting the different craft lying there at one time, he found 7 Kentucky boats, similar to the one in which his party was descending the river, with coal, iron, and dry goods from Pittsburgh; 4 barges or keel-boats, one of 150 tons and with two masts; 4 large "flats" or "scows," with building-stone, salt from the "Kenhawa" works, etc.; and 6 arks laden with immigrants and their furniture, similar to the Kentucky boats, only smaller.³ Fearon, a contemporaneous traveler, also stated that the average period of time for boats from Louisville to New Orleans was about 28 days, and from New Orleans to Louisville 90 days. Steamboats required 12 days down and 36 days up, "when their machinery does not meet with an accident."⁴ The boats for passage to New Orleans for freight he described as being about 25 feet long, 15 feet wide, and carrying 300 to 500 barrels of salt, flour, etc. These boats were carried by the normal current from 80 to 100 miles per day. During high stages on the Ohio the emigrant boats were carried, without rowing, by the current, 3 to 4 miles per hour.⁵ Navigation at night, except in case of dense fog, was possible on the Ohio, but on the Mississippi the navigation was both difficult and dangerous.

Faux, in October 1819, found 12 to 16 elegant steamboats aground at Shippington, Kentucky, waiting for the water. He stated that there were then 60 or 70 steamboats on the Mississippi and Ohio Rivers.⁶

Craig gives a curious and amusing description of the first attempts to go from Steubenville to Pittsburgh by steamboat. The boat was the first of the kind built at Steubenville and the attempt was made at

¹*American State Papers, Miscellaneous*, II, 300-302.

²*Niles' Register*, XII, 143, April 26, 1817.

³Palmer, *Journal of Travels*, 71-72.

⁴Fearon, *Sketches of America*, 246.

⁵*Ibid.*, 432.

⁶Faux, *Memorable Days in America*, 200, 203.

an early date, before the art of propelling boats by steam was well understood.¹

Birkbeck stated the average speed of heavily laden steamboats upstream to be about 60 miles per day. According to him, there were in 1817 about 25 steamboats of from 50 to 400 tons burden plying on the Mississippi and Ohio. These were generally built at Pittsburgh or had their machinery prepared there.² He gave as one of the reasons for choosing a location in Illinois for his colony that it was "so much nearer the grand outlet at New Orleans." Steamboats already navigated the Wabash, one having made its way up from New Orleans to within a few miles of the settlement in the winter of 1817-18. At New Harmony, 20 miles below, a steamboat was to be built, but at Birkbeck's own settlement two pirogues were being constructed out of large poplars for the purpose of navigating the Wabash. By lashing them together and laying planks across, a roomy deck and good covered stowage were obtained in both, and bulky as well as heavy cargo could be taken.³ This method of floating the produce down the streams to the Ohio and thence down the Mississippi in rude boats constructed by the farmers themselves was practiced on Indiana and Illinois streams long after the advent of the steamboat. Birkbeck further called attention to the irregularities and impositions attending steamboat navigation, arising from want of competition. Other steamers were being built to ply between Louisville and New Orleans and freights were expected to drop. As a proof of activity along this line, he mentioned one steamboat of 700 tons building at Louisville and nearly 100 smaller ones on the stocks.⁴

¹Craig, *The Olden Time*, II, 368-373.

²Birkbeck, *Notes on a Journey in America*, 150-151. Extracts from the logbook of the steamboat *Etna* are given on pages 151-153.

³Birkbeck, *Letters from Illinois*, 19, 55, 119.

⁴Birkbeck, *Extracts from a Supplementary Letter from Illinois*, 4.

CHAPTER IV.

EARLY LAND ROUTES IN OHIO.¹

Ohio trails, 117. Ohio roads and settlements, 119. Post-roads in Ohio, 121.
Private turnpikes in Ohio, 124. Economic basis of Ohio canals, 127.

OHIO TRAILS.

The evolution of land routes in Ohio merits special attention. It was largely determined by the topographical and economic relation of the territory to the surrounding regions. The position of Ohio in relation both to the north and the south and to the east and the west has been throughout its history of strategic importance in the development of transportation, whether by land or by water. Lying between the Great Lakes and the Ohio, it has had free access by water to the immense expanse of commercial territory bordering upon the Great Lakes, and on the south to the whole Mississippi Valley.

On its southern border immigrants came into this region from Virginia and Pennsylvania by way of the Monongahela and the Ohio, or coming up from the south, either by the overland route or by rivers, they crossed the Ohio from Kentucky. Gist, traveling in 1750, found a number of Scotch-Irish people in the Ohio territory engaged as fur-traders. Originally from New York or Pennsylvania, they had entered Ohio through Kentucky.

Indian trails covered Ohio fairly well and in the interior of the State were numerous small rivers. The watershed separating the waterways flowing north from those flowing south extended practically east and west across the far northern part of the State, thus causing the largest rivers to flow to the south. Only a few miles of portage intervened between these two river systems. This condition, although it has ceased to be one of any considerable commercial consequence, since the building of north-and-south railroads and canals, was in the early history of the State a factor of great industrial and social importance.

Natural conditions had marked out clearly the location of the main transportation routes, which seem, in fact, to have followed buffalo traces and Indian trails on the high ground, along the watersheds and streams, leading through and connecting productive areas. These traces and trails marked the suitable courses of commercial thoroughfares for the white man.² It will be observed on the map how closely they followed the water divides, and also how their origins at those points on the Ohio River which communicated with the settled por-

¹The following pages are compiled from Gephart, *Transportation and Industrial Development in the Middle West*, 21-22, 24-31, 54-58, 134, 137-138, 140-147.

²Cf. Ohio Archæological and Historical Society, *Publications*, VIII, 264-295, for a description of these trails.

tions of Kentucky, Maryland, Virginia, and Pennsylvania afforded a convenient and ready route into the Northwest Territory.

After the territory was conquered from the Indians and opened for settlement, thousands of people flocked into the region. It is probable that the greater number of the settlers came overland, for the Ohio River, because of the difficulties of navigation above described, did not become an extensively used route until after 1800. The overland route of the Wilderness and other semi-roads were preferred. Because the Ohio River later became such an important carrier of passengers and freight (especially of the latter), it should not be inferred that it was throughout the earlier period, also, the chief route of travel and traffic.

The old Indian trails in many cases determined the location not only of commercial routes, but also of towns. Settlements were often made at the intersection of trails or where two or more converged, and a map of these trails shows clearly that some point near Columbus was destined to be the site of a city, and a similar statement holds true of Sandusky, Cincinnati, Marietta, Portsmouth, and Pittsburgh. To these points came the trapper and the trader, to meet the Indians, and thus were established the rude market-places of early Ohio.

The first step in the improvement of the trails was to widen them. Except in a few cases, where the trails ran to salt-wells or to maple-sugar camps, the Indian had no occasion to widen them, since upon their long journeys, in war or hunting parties, for convenience and safety, they traveled single file. The process of widening the paths began with the pack-horse of the early settler, whose burden on each side broke off and brushed aside the overhanging brush and branches. As the important trails became thus widened, minor ones were discontinued and became wholly overgrown with brush. Even the military roads of Braddock, Washington, and Forbes soon became impassable on account of fallen trees and underwood, so that the narrow pack-horse paths continued for many years to be the only routes for travel.

Pack-horses have been aptly designated the industrial agents between the East and the West, since they were the only means of transportation that could be used. The following quotation from Doddridge's *Notes* gives some account of the character of the traffic:

"The acquisition of the indispensable articles of salt, iron and castings presented great difficulties to the first settlers of the western country. Coined money was practically unknown, and their medium of exchange was fur, ginseng, and other local productions. Each family collected what peltry and furs it could obtain throughout the year for the purpose of sending them over the mountains for barter; in the fall of the year, after seeding time, each family formed an association with some of its neighbors for starting this caravan. The horses, with bells and collars around their necks, were further fitted out with pack-saddles, to the rear part of which were fastened hobbles made of hickory withes. The bags, provided for the conveyance of salt (on the return trip), were filled with feed for the horses, and large wallets, well filled with

bread, 'jerk,' boiled ham, and cheese, supplied the drivers with provisions. Each horse on the return trip carried 2 bushels of alum salt, which weighed 84 pounds to the bushel."¹

The foremost horse in each group was led by the driver, and each successive horse was tied to the saddle of the one in front. Bars of iron were often fastened on the backs of the horses and then bent around their bodies. Barrels and kegs were secured by this means on the sides of each horse. The paths were in many places scarcely more than 2 feet wide and led over hills and through valleys. These bridle-paths were the only means of communication with the East, until the region became more densely settled and the wants of the settlers more varied and their production for the market more considerable. The interaction of these economic causes compelled the old bridle-paths to give way to improved roads.

OHIO ROADS AND SETTLEMENTS.

If the first settlements in Ohio had been made near those in Pennsylvania, Virginia, New York, and Kentucky, and had then gradually spread westward and northward until the whole territory had been settled, there would doubtless have been a better and more systematic development of the transportation routes. The demands for extension of these routes would have been made gradually, and consequently the wealth of the people would have been more nearly adequate to their construction. As it was, the people of Ohio and all the States of the Middle West were forced to follow a makeshift principle in building their ways of communication and transportation. As States they burdened themselves with badly planned and expensive highways, which they were later compelled to reconstruct or abandon.

The first settlers of the Ohio country were sent out by the Ohio Company, early in 1788. The party traveled from Ipswich, Massachusetts, to a point on the Youghiogheny River, now West Newton, Pennsylvania, where it was joined by a second party which had come overland from Hartford, Connecticut, after a journey of 4 weeks. At the Youghiogheny, a "fleet" was constructed, consisting of a "large" boat, the *Mayflower*, 45 feet long and 12 feet wide, with sides thick enough to prevent the Indian bullets from passing through it, a flatboat, and several canoes. This fleet sailed down the Ohio and on April 7, 1788, reached the mouth of the Muskingum, where a settlement was made.

The village thus formed was called at first Adelphia, but later changed to Marietta. Its site has been much criticized. The land was certainly not as fertile as in the valley above. But there were other and good reasons for its selection. The settlers had the protection of Fort Harmar, a Government military post across the Ohio

¹Doddridge, *Notes on the Settlement and Indian Wars of the Western Parts of Virginia and Pennsylvania*, 120-121.

River. No Indian tribe had any especial habitation at that point, and hence there was less danger from the Indian raids than if it had been in distinctively Indian territory. It was not too far from an already settled section in Virginia, whence help might be obtained. Lastly, the Marietta settlers believed that the commercial route between Lake Erie and the Ohio River would be by way of the Cuyahoga and Muskingum Rivers, and that theirs was a favorable location to secure the profits of this trade. In this belief they were for many years justified, for the chief route of traffic between lake and river did go that way. When the State waterways were made available for commerce by the construction of the Ohio canals and the improvement of the inland rivers (particularly the Muskingum) by the National Government, Marietta was an important port. Other settlements rapidly followed up the smaller rivers, as well as along the Ohio.

When the first road across the Ohio (Zane's Trace) was opened up by Ebenezer Zane in 1797, many points in the region were settled. The opening of this road, bad as it was, seems to have changed the current, or called attention to the possibility of overland routes, for others followed rapidly.

The first settlers who came to the Western Reserve—surveyors of the Connecticut Land Company under the leadership of Moses Cleaveland—arrived from Buffalo in an open boat in 1796. The town they laid out occupied a strategic position from a transportation standpoint. It had been for many years an important trading-center between the fur-buyers and Indians and continued to be the leading-center from which goods were carried by pack-horses and various means to the homes of the settlers. One trail, that ran from Buffalo to Detroit through Cleveland, became later the Upper Ridge Road and then the route of the New York Central. Another important trail from the Ohio River had its terminus at Cleveland, and this trail followed what was later the water-route formed by the Ohio, the Erie Canal, and the improved Muskingum River, and still later the general route of the Wheeling and Lake Erie and the Zanesville and Marietta Railroads. A post-road from Cleveland to Pittsburgh was opened in 1801. The lake did not become of any great importance until the introduction of the steamboat in 1818, and not of commanding significance as a commercial route until the opening of the Erie Canal in 1825.¹ The early roads were, save in a few cases, almost hopelessly bad.

Bridges in early times were few, and as a result ferries were numerous. So important a part did they play in the economic and social life of the people that the legislature made very minute provisions for their operation. Every person who ran a ferry was required to take out a license, and such a license was granted only upon petition of 12 householders of the township in which the ferry was to be located. The

¹Rice, *Pioneers of the Western Reserve*, 46-56.

operator must keep a "good and sufficient boat, sufficient hands to manage it, and offer service from daylight until dusk, and convey mails and public express across it at any hour of the night." The commissioners of the county fixed the rate of ferriage, for this monopoly at a time when the necessity for passageways was urgent and frequent might have been a menace to the welfare of the early settlers.¹

POST-ROADS IN OHIO.

The three-per-cent act of 1803 provided for the construction of roads in Ohio, which would probably have been impossible had the State been dependent on its own efforts. By February 1804, \$17,000 was available, and an act was then passed for laying out an extensive system of roads in the State. The extension of the Cumberland Road was completed after the opening of the Erie Canal in 1825.

A second general highway act, in 1806, reflects the growing population and its needs. This gave county commissioners power to repair and open roads, and to levy road taxes. There were many efforts to have these roads declared post-roads, in the hope that thus they would be cared for by the National Government.²

In February 1809, the first turnpike company in Ohio was incorporated, by an act which minutely prescribed its power and its duties to the public. If later charters had followed this one in its regulative and protective features many evils in later transportation history would probably have been avoided. It did serve as a model for many of the later turnpike charters, but the people of the State became so anxious for transportation routes that, when more liberal terms were later demanded by the incorporators, they were willingly granted by the legislature.

In June 1807, there were the following post-roads in Ohio:³

- (1) From Chillicothe to Franklinton, thence to Washington; mail once in two weeks.
- (2) From Chillicothe via Brown's Cross-Roads, Williamsburg, Columbia, to Cincinnati; mail once a week.
- (3) From Cincinnati via Hamilton, Franklin, Dayton, Stanton, Springfield, Xenia, Lebanon, to Cincinnati; mail once a week.
- (4) From Chillicothe via Wheeling to Alexandria; mail once a week.
- (5) From Cincinnati via Hamilton, Lawrenceburg, Boone Court House, to Frankfort; mail once a week.

In addition to these mail-routes there were also the post-roads from Wheeling to Limestone, from Marietta, Gallipolis, and other points in southeastern Ohio to the East. From the political center, Chillicothe, and the industrial center, Cincinnati, the leading roads diverged.

The bad condition of the roads and irregularity in the receipt of the mails was the ground of common complaint. Postmasters were fre-

¹Ohio, *Laws*, 1805, chap. viii.

²*Ibid.*, 1806, pp. 13-24.

³*Liberty Hall and Cincinnati Gazette*, June 2, 1807.

quently accused of holding the mail. Post-riders in crossing swollen streams would sometimes lose the mail sacks, and, at other times, forget some of them, especially if the mails were heavy. When, however, the mail-coach arrived, complaints generally ceased, for it became possible to convey greater amounts of mail with greater certainty and regularity. It may be noted that in the operation of these passenger and mail coach routes, as in the case of railroads at a later period, competition and consolidation were prominent factors. Large companies which owned many miles of line were formed and the rivalry among these operating companies often became intense. Each sought to shorten the time of the journey, to reduce the fare, to secure better coaches, better horses, and better drivers. The larger companies bought up the smaller ones and extended their lines.

The first passenger coaches were long and awkwardly constructed vehicles with the seats running crosswise. The chief source of revenue however, came from the transportation of freight. This was done in huge wagons, called freighters, which carried the products of the eastern mills and factories to the West and received in return agricultural products. Time-tables and tariff schedules, such as our railroads to-day have, were published and posted, although there were no commissions to enforce adherence to published schedules or prevent rebates or discriminations.

Many laws were passed applying to the operation of the stage-coaches. For example, an act of the legislature required lamps to be placed on all coaches used at night and subjected the driver to a fine for not providing or not lighting them. Another act required the discharge of drivers who had been intoxicated while on duty, and still another imposed a fine on any driver who left his horses unfastened while they were hitched to a coach.

Passengers purchased their tickets, including all toll charges, from the stage company. A way-bill was made out and given to the driver. This way-bill was submitted to each tavern-keeper on the route, who signified, on the blank space provided, the time of arrival and departure, just as is done at present by the local telegraph-operators of railway companies.

After 1810 the construction of improved highways by turnpike companies was the favorite method in Ohio of securing roads, for it must be remembered that the three-per-cent fund was used in most cases to lay out roads. These often were not improved for many years, and the counties in most cases spent very little in improving the means of transportation. Ross County, in which the early capital, Chillicothe, was located, spent in 1813 to 1814 only \$89.70 for roads and bridges.¹ Much was done by the collective efforts of private individuals to secure and improve means of transportation, and something was accomplished

¹*Report of Treasurer of Ross County, Supporter, Sept. 24, 1814.*

by the Federal Government, which in 1814 had 25 post-roads in Ohio. The rates of letter postage, which are in a way indicative of the transportation facilities, were in 1814 as shown in table 23.

TABLE 23.

	<i>Cents.</i>
For any distance of 40 miles or under.....	12
For any distance of 90 miles, not exceeding 150 miles.....	18.5
For any distance of 150 miles, not exceeding 300.....	25.5
For any distance of 300 miles, not exceeding 500.....	37.5
Any paper if printed in the State, for any distance not exceeding 100 miles....	1.5

The basis of charge was distance, for the cost of carriage was almost wholly directly proportional to distance. During the period of turn-pike transportation complaint about delivery of mail was general, but this was in a large part due to the rapid development of the Middle West. No sooner was a mail-route laid out than the extension of settlement into more remote regions, or an unequal increase of population within the settled area, made an extension or alteration of route necessary. Over these new routes, in the absence of bridges and of general improvements of way, the delivery of mail was bound for a period to be very uncertain.

During this early period the question of transportation was one of the chief subjects considered by the State legislature, for the State's development was retarded by the lack of roads and improved waterways. This interest in transportation is disclosed by the fact that 44 per cent of all the acts passed by the legislature of Ohio in 1825 referred to this subject and 22 per cent of all the general acts referred directly to transportation.¹ This record was, however, exceeded by that of 1826, when 55 per cent of all acts referred to transportation. The greater number of these acts had reference to roads.² By 1826 stage-coaches were arriving at Columbus three times a week from Cincinnati, Chillicothe, and Lancaster, and twice a week from Zanesville and Delaware. The decade of 1820 to 1830 and the one succeeding mark a period of rapid building of transportation routes in Ohio. In his message to the legislature in 1827 the governor pointed out that the location of the National Road had been decided, the routes of the State canals had been fixed, and the Erie Canal had been completed.³ Everything in a transportation way looked encouraging and the people were urged to lay out a greater number of roads in order to make the most of the through east-and-west route (the National Road) and the through north-and-south routes (the canals and rivers).⁴

¹Ohio, *Laws*, 1825, 50.

²*Ibid.*, 1826, p. 3.

³Ohio, *Senate Journal*, 1827, p. 11.

⁴*Cf. Cincinnati Gazette*, Sept. 21, 1837. "A new era in the prosperity of the city would be witnessed had we good roads to Chillicothe, Lexington, Indianapolis, and Columbus. It is certain that the number of travelers between this city and Columbus would be increased ten-fold if there were any adequate provisions for getting from one point to the other without risking life. Cincinnati can be reached pleasantly only in one way, and that is by the river. In the winter or in the wet and frosty season of the year the city is cut off from communication on every side. The farmer thinks the roads should be made by the inhabitants of the towns, for otherwise they would starve and freeze, while the inhabitants of the towns think the farmer should make them because they increase the value of the land."

PRIVATE TURNPIKES IN OHIO.

Although, as stated above, the first private-turnpike charter was granted in 1809, it was not until after 1817 that these companies became numerous. The State roads laid out from the three-per-cent fund were not improved roads and did not supply the needs of the rapidly growing industrial society, either as to number or character. The private turnpikes were, on the other hand, well constructed, and the terms of the charter usually provided that no toll could be collected unless the roads were kept in good repair. Except the National and the Maumee Roads and a few other roads near the large centers of population, the turnpikes were the only good roads in the State.

Private capital could not be expected to build such roads unless a fair return on the investment was clearly indicated, and for this reason improved roads awaited to a great extent the settlement and partial development of a district. But the people wanted roads to aid in this development, and when the question of constructing canals at public expense was decided in the affirmative, many people, particularly those of districts which did not secure a canal, insisted that the State should also aid in building highways and railroads. Since those sections of the State which secured canals needed also to develop a system of roads subsidiary to the canals, the policy of State aid to highways—as to railways—was entered upon with general unanimity. This demand became expressed in the law of 1836,¹ which authorized the governor to subscribe to the stocks of turnpike companies an amount equal to that subscribed by private individuals.

Previous to this, however, the commissioners of counties had been authorized to subscribe to the stock of any turnpike company whose road lay within the county certain amounts, which were usually specified in the special act, although sometimes the act authorized the commissioners of X County to subscribe to and own any amount of stock in X Turnpike Company that they may deem proper.² When the State subscribed to the stock of such companies, an annual report was required and subscription was prohibited to the stock of any road which would affect the profits of one already constructed. In no case was the road to be located within 20 miles of another such road, nor was the total annual subscription to exceed \$3,000,000. In 1840 the auditor's report showed that the State had subscribed \$1,603,700 to such companies, and by 1848 this had reached \$1,921,675.71.³ The large amount which had been subscribed by 1837 and the pressing financial difficulties of the State caused the auditor to report:

“That the policy of the State in enacting this law [1836] was doubtless instigated by sound views and capable of good purpose; but the extent to which it is pressing the public liabilities, the abuses which it has engendered, and the present condition of the State's finances would seem to point with an unerring finger to its suspension, if not to its final repeal.”⁴

¹Ohio, *Laws*, 1836.

²*Ibid.*, 1832.

³Ohio, *Annual Reports of the Auditor*, 1848, 1849.

⁴*Ibid.*, 1840.

Some companies had secured the subscription and had not built the roads, and, as the State's credit was becoming impaired, further expenditures were thought unwise until some of the past expenditures for public improvements had become more productive. The law was repealed in 1840, except in certain cases where the road had been begun and part of the subscription had been paid out. But in 1842 the auditor was directed to suspend the issuing of warrants to turnpike companies for State subscriptions, not only because there were no funds for such a purpose, but also because some of the outstanding warrants were running to protest. In 1844 the condition of the State treasury had become so serious that the board of public works, the treasurer, and auditor were forbidden to make any contract for the extension of any public work.¹ The three-per-cent fund continued to be a source of revenue for laying out roads, but this was decreasing in amount. When the lands of the northwestern part of the State were opened for settlement by canals, roads, and railways, the fund increased for a time. It is quite impossible to state exactly what sums were subscribed by the local governments during the period of aid to turnpike companies, since not infrequently their officials were authorized to subscribe in any amounts which they deemed wise, although such subscriptions could later be made only upon vote of the people. After a careful tabulation of the specific sums authorized, a very conservative estimate would place the sum equal to that subscribed by the State, that is to say, approximately \$2,000,000.

Much litigation and difficulty were experienced by the State with the turnpike companies to whose stock it had subscribed. The companies not only disregarded the toll-rates which the legislature had fixed, but in many cases refused to report either the amount of toll which had been collected or the use to which it had been put. In some cases the money from the bonds of the State issued for construction purposes was used to pay other expenses, and the State's share of the tolls was continually employed to pay company debts.² In an effort to secure greater uniformity and obedience to the toll laws the auditor recommended that:

"Since the people of Ohio in their sovereign capacity as well as individually have expended large sums in the construction of turnpike roads, a commissioner should be appointed from each company which had received State aid, to meet with the commissioner of the purely private companies and the board of public works to devise as nearly as possible uniform tolls."³

¹Great difficulty was experienced during the early years in collecting the land tax, and in this year the delinquent taxes amounted to one-ninth of the total State tax levied. In many cases the return from the land was uncertain, both on account of the farmer being unable to market the produce, and on account of the crops being more subject than now to the conditions of the weather. Then, too, the State tax had become large, and as it was levied for a purpose from which many derived little benefit, some thought there was further justification for indifference as to payment.

²Cf. Ohio, *Annual Reports of Auditor*, 1840 and 1843. A fine of \$500 was imposed in 1840 upon any turnpike official who refused to pay the dividend due the State, but when either no report or an incomplete one was filed it was impossible to determine what dividend was due. The supreme court of Hamilton County decided that the tolls belonging to the State could be used to pay company debts and the sum could be credited upon the drafts due from the State.

³*Ibid.*, 1843.

This recommendation resulted in the Turnpike Convention of 1844, which adopted a new schedule of tolls to take the place of that fixed by the law of 1817.¹ As these tolls prevailed in general throughout the turnpike period, they are given in table 24.

TABLE 24.

For every sheep	2.5 mills.
For every hog	5 mills.
For every head of cattle 6 months old and up	\$0.10
For every horse, mule, or ass .....	.03
For every horse, mule, or ass, with rider .....	.0625
For every vehicle of 2 or 4 wheels drawn by one animal .....	.1250
For every additional animal to such vehicle .....	.0625
For every 4-wheeled vehicle, including coaches, stages, carriages, barouches, wagons, etc., drawn by 2 animals .....	.25
For every additional animal to such vehicle .....	.0625
For every sled or sleigh drawn by 1 animal .....	.10
For every additional animal .....	.05
For all wagons carrying not less than 5,000 pounds, with a tire not less than 4 inches wide, a reduction of 25 per cent from above rates .....	.31

Additional toll was collected for loads of over 5,000 pounds.²

As prosperity began to return in the forties, and as the State had definitely ceased to aid in highway construction, the local governments began to construct free turnpikes. In 1843 these turnpikes were constructed under the act which authorized commissioners to lay out the road, receive donations and gifts, and collect all tax levied on the land within 2 miles of the road. This plan gave the name 2-mile turnpikes to highways constructed under this act.³ In 1845 the first general act for laying out and constructing highways was passed. Previous to this, special legislation was the rule in conferring authority to build a road, a railway, a bridge, or to form a manufacturing company.⁴ In the same year plank roads were begun, as they seemed to meet the demand for improved highways, and for a time these roads proved very popular.⁵

It must be remembered that the West in general was during this period a debtor section. Although potentially wealthy, it needed means of transportation in order to realize on its immense natural resources. Incidentally it may be noted that this fact goes far to explain, if not entirely to justify, the enthusiasm of the West for State banks of issue, which extended credit to the people and provided an expanded currency as a means of making more immediately available their potential resources and the proceeds of their produce during the period required to market it.

¹However, in some cases certain special schedules had been established for companies at the time of their incorporation.

²*Report of the Turnpike Convention, 1844.*

³In 1845, 25 such roads were authorized, and in 1846, 37.

⁴*Ohio, Laws, 1845.*

⁵*Ohio Cultivator, June 23, 1849.* "Plank roads are rapidly finding favor in this State. They are constructed without steep grades and with numerous turnouts. The cost is about \$2,000 per mile, and their duration, when hemlock is used, is about 7 years. The advantages of this road are: (a) they can be used throughout the year; (b) heavier loads can be hauled; (c) cost of transportation is low."

Wheat was hauled from the north-central part of the State to Toledo, but the bulk of the farm crops, as compared with their value, limited the distance which they could be transported over the poor roads. Those districts near the National Road and the few other good roads fared better, and the transportation system as organized upon these roads was remarkably efficient.¹ There were three classes of transportation agencies: first, individual owners of six-horse teams, who hauled freight east and west on contracts made for each trip; second, farmers along the line, who during the slack farming season or when the charges were sufficiently attractive went into the business temporarily; third, and by far the most important, the large freight and passenger companies that owned many wagons and coaches. The first class had to conform to the regulations and charges laid down by the companies. Charges were usually based on 100 pounds per mile, but sometimes a general charge was made for a load. There was a certain *esprit de corps* among the regular drivers and transporters. It was a difficult matter to secure without influence a position in the transportation business on the National Road or the early turnpikes.² There was intense rivalry among the companies, and the particular kind of coach, the excellence of the horses, the sobriety of the drivers, and the rapidity of travel were all considered fit subjects for advertisement.³ In time, as canals, railways, and more roads were supplied, these companies ceased to operate in Ohio. The stage-coach and freighter followed the frontier to the West, until, pressed by the railway, they disappeared, and their golden days are now known only in the literature descriptive of the period.

ECONOMIC BASIS OF OHIO CANALS.

Before 1830, five distinct economic districts had become more or less completely defined in Ohio.⁴ The first of these was the grazing or butter-and-egg district of the Western Reserve. This district naturally was enabled to carry on trade easily with Canada and New York by way of the lakes. Philadelphia aimed later to deflect a part of this trade by the construction of the canal connecting Cleveland with the Pennsylvania system.

The second district was designated as the mineral section. This, stretching along the Ohio River from the mouth of the Scioto to the

¹It was said that the farmer along the way knew the time of the day from the passage of the coaches of these companies.

²Searight, *The Old Pike*, 110.

³*Cf. Cincinnati Gazette*, Feb. 6, 1836. The chief companies were the Stockton, the Good Intent, the June Bug, and the Pioneer. The fare in 1836 from Cincinnati to Wheeling via Columbus was \$11.50. In 1829 the President's message was carried from Washington to Columbus in 34 hours and 45 minutes, "a performance unparalleled in the annals of traveling in this section." *Cf. Ohio, State Journal*, Dec. 11, 1829. In 1846 the President's message was carried by one of these companies from Wheeling to Columbus in 8½ hours. *Cf. Ohio Statesman*, Dec. 11, 1846.

⁴See the description of the districts in the article "Brief History of Ohio," in *Hesperian or Western Monthly Magazine*, I, 9, 1838.

Pennsylvania line, reached back to about 60 miles in different parts, to the counties of Fairfield, Licking, and Tuscarawas. The Scioto River formed the district's western boundary and the projected Ohio and Erie Canal its northern. The surveyed line of the National Road was just north of the mineral section. The Hocking Canal, from Athens to Carroll on the main Ohio and Erie, was planned to furnish better transportation to the portion of the district which was too far east of the Scioto and north of the Ohio to use either of these natural waterways. The Muskingum furnished transportation to its more eastern population, while the Ohio offered an admirable water communication on its entire southern boundary. This district was thus well provided for by the existing and proposed highways of commerce. The primary concern of the district was in the development of all local means of reaching these main arteries of the transportation system.

The third section in Ohio was that noted for its production of the small grains. Beginning with the counties of Jefferson and Columbia on the Pennsylvania line, it ran west between the grazing and mineral districts to the Scioto River, thence north to the National Road, and to the waters of the Great Miami. The district was naturally interested in the Ohio River improvements, the National Road and Pennsylvania's proposed communications with the East, the Ohio and Erie Canal with its contemplated branches, and the Miami Canal. By means of the Miami, the products of the western portion of the section would be transported to Cincinnati. To reach the northern portion of the small-grain section and deflect its traffic to Sandusky and New York was one of the motives for the interest taken in the never-completed canal from Columbus to Sandusky.

The beef and live-stock district was composed in the main of Sandusky, Darby, Pickaway, Union, Madison, and Fayette Counties. Thus it constituted a portion of northwestern Ohio and of the northern and eastern parts of southwestern Ohio. The Sandusky portion of this district was naturally tributary to the lakes. The other portions were situated more or less conveniently to the Ohio and Erie Canal. Down this canal shipments could be made to the Ohio, thence to Cincinnati, and eventually to the far Southwest and the eastern cotton belt.

The corn and pork district constituted the major part of southwestern Ohio. It lay between the line of the National Road and the Ohio, and between the Scioto and the Indiana boundary. This region started the great packing industry at Cincinnati, giving to that city its designation "Porkopolis."¹ Upon this district the Southwest became dependent for the greater part of its supplies of bacon, pork, and lard.²

¹Turner, *Rise of the New West, 1819-1829*, p. 97.

²In 1826 Cincinnati's output was \$1,000,000 worth of pork, \$57,000 worth of bacon, and \$64,000 worth of lard.

The trade of three-fourths of the State, which was carried on with New Orleans, was, at this period, little better than no trade at all. The arks or New Orleans boats,¹ as they were called, could only be used for descending the river. The hands employed in making the long voyage had to return overland through the Indian country. After building the boats and loading them in the interior, the freshets had to be awaited before the boats could start. It often happened that all the streams rose at the same time, and then such an amount of produce descended that the markets were flooded. "The best flour sold for \$3 a barrel at such times, and pork at \$4 to \$5 a barrel, in New Orleans, which amounted to a total loss of the cargo."² The people of the West were not then in a position to remedy the condition. Farm lands were reduced in value.³ A great scarcity of money existed, owing to the transportation of specie to the East. Many banks failed, while others were compelled to refuse specie payments.

Then came the steamboat. By 1819, on the western waters, 41 steamers had been constructed.⁴ By 1822 they had gone up the Wabash and up the Mississippi to Galena for the lead of the district. By 1830 there were 230 steamers on the Mississippi.

From requiring half a year to go from Louisville to New Orleans in the keel-boats, by 1820 the time was reduced to from 15 to 20 days for the upstream journey and from 10 to 15 for the downward. By 1824 the up trip was made in 12 days and by 1827 in 9 days, with the downward journey of 6 days' length.⁵ By 1825 the steamboat had surpassed all its competitors on the western waters and 57 per cent of all freight carried to New Orleans went by steamboat.

With the resultant increased river traffic in the Ohio Basin,⁶ greater interest was shown in every improvement by which the produce could more readily reach the navigable waters of the Ohio. At the same time the eastern seaports were more anxious to complete connections with the West so as to reduce the amount of traffic which was lost to them by its shipment to New Orleans.

¹See *Report on Internal Commerce of the United States*, House Ex. Doc. No. 6, 50th Cong., 1st sess., XX, pt. ii, 185-186. See also Preble, *Chronological History of the Origin and Development of Steam Navigation, 1543-1882*, p. 66.

²Atwater, *History of the State of Ohio*, 246-247.

³Congress, having reduced the price of the public lands to \$1.25 an acre, caused a cheapening in land values in the West.

⁴Atwater, *History of the State of Ohio*, 249; Flint, *Letters from America*, 260; Hall, *Statistics of the West*, 239; Preble, *Chronological History of the Origin and Development of Steam Navigation, 1543-1882*, p. 64. In the *Report on the Internal Commerce of the U. S.*, House Ex. Doc. No. 6, 50th Cong., 1st sess., XX, pt. ii, 192-194, is given an account of steamboat building.

⁵It was reported that in 1823 the trip from New Orleans to Cincinnati took only 16 days, fare \$50, and downstream 8 days, fare \$25; Louisville to Cincinnati, 30 hours, fare \$6, and downward, 15 hours, fare \$4; Cincinnati to Pittsburgh, 5 days, \$15, and downward, 60 hours, \$12. Bishop, *History of American Manufactures*, II, 282.

⁶*Report on Internal Commerce of the United States*, in House Ex. Doc. No. 6, 50th Cong., 1st sess., XX, pt. ii, 188. Forty-nine per cent of traffic reaching New Orleans in 1822-1826 was from the Ohio Basin country. *Ibid.*, 197.

Amid the above-described conditions in Ohio progressive men began earnestly to endeavor to perfect the internal communications of the different parts of the State. Until that was accomplished, each section would remain a community unto itself, loosely bound to other parts of the State socially, politically, and industrially. Even after the State's system of improvements was once well conceived, the peculiarities and prejudices of each section prevented the desired unity of action.

On December 14, 1818, and again on the 23d, Governor Ethan Allen Brown, afterwards generally designated the "Father of the Ohio Canals," urged the State legislature¹ to provide for the actual surveys needed to determine the routes for canals to be constructed by the State. For two years the governor was blocked by disagreements between the Senate and the House.² He finally succeeded in securing the appointment of a committee which made a report³ to the governor furnishing valuable arguments to be used in further advocacy of the State's adoption of the work. At the time of the report, January 1822, flour was selling at \$3.50 a barrel in Cincinnati, while it was bringing \$8 a barrel in New York. With a land-carriage cost of \$2.50 a barrel to Lake Erie and a transportation charge of over \$9 a barrel from Buffalo to New York,⁴ the Ohio farmers, at the time, were unable to take advantage of the New York market. When the Ohio and Erie Canal was constructed it was estimated that the 80,000 barrels annually produced in Pickaway County alone would reach the lake at a saving of \$176,000 a year in freight charges.⁵

But the State government had little revenue from which to furnish the funds necessary to inaugurate the proposed canal system.⁶ The committee's report, mentioned above, suggested that the State rely on loans. Congress, it was expected, would grant or sell land to the State at much lower than the retail price. It was urged that the State, in pledging some of this land for the loans, would receive from the sale of the remaining lands at a higher price sufficient money to refund the purchase price and the greater part of the additional loans necessary.⁷ By a combination of the interests of canals and the public schools a bill was passed, January 31, 1822, authorizing the preliminary surveys preparatory to the initiation of the State's system of internal improvements.⁸

¹McClelland and Huntington, *History of the Ohio Canals*, 10; Kilbourn, *Public Documents concerning the Ohio Canals*, 5-16.

²McClelland and Huntington, *History of the Ohio Canals*, 11-12.

³Ohio, *House Journal*, 1822, Jan. 3.

⁴Massachusetts Canal Commissioners, *Report*, 1826, p. 159.

⁵McClelland and Huntington, *History of the Ohio Canals*, 13.

⁶See Atwater, *History of the State of Ohio*, 248, for account of low financial condition of the State.

⁷McClelland and Huntington, *History of the Ohio Canals*, 14.

⁸Atwater, *History of the State of Ohio*, 253-263, gives account of the political battles waged in the legislature by one of the main workers.

CHAPTER V.

WATERWAYS IN NEW ENGLAND.

The era of internal improvements, 131. Gallatin's report of 1808, 135. Effects of the War of 1812, 137. President Monroe's message of 1817, 139. New England, 142. Maine, 143. New Hampshire, 144. Vermont, 145. Massachusetts, 145. Railroads in Massachusetts, 157. The Cape Cod Canal, 159.

THE ERA OF INTERNAL IMPROVEMENTS.¹

An important stage in the agitation for internal improvements is marked by Gallatin's report of 1808. Washington and Jefferson, and other public-spirited men who had labored for a "broader national life" had foreseen that a national policy of improvement of land and water routes was essential. The outbreak of the European wars in 1793 had initiated a new epoch in American commerce and industry. Up to that time England, France, Holland, and Spain had restricted to themselves the trade of their colonies, and this restriction, together with tariff discrimination against American products, had forced the commercial classes in America to look to the interior for profitable trade. But, although prices were at a comparatively low level, and although the difference in price levels east and west was so considerable as to promise large profits for those engaging in domestic commerce, it was realized that the resources of the interior could not be commercially exploited to advantage until the roads and waterways had been improved. Upon the outbreak of war in Europe colonial monopolies became impossible or disadvantageous, and the commerce of the world was thrown largely into American bottoms. In 1791 our export trade amounted to but little over \$19,000,000; by 1794 it had risen to \$33,000,000, and by 1807 to \$108,000,000. The registry of the ships engaged became in a few years almost entirely American. In 1789 nearly 50 per cent of the vessels engaged in our foreign commerce were of foreign registry; by 1796 the proportion had fallen to 6 per cent. On the high seas and in foreign ports during the Napoleonic period the neutral American flag supplanted the flags of other nations. While the risk to shipping was enormous, under the various foreign decrees and orders-in-council, the profits were correspondingly great, and the capital of the country turned to engage in foreign trade and shipping, to the neglect of domestic manufactures and commerce.

In the South the development of the cotton industry gave rise to a distinct line of commercial growth. The increasing demand in Europe placed a premium on the fiber, while Whitney's invention of the cotton-gin cheapened production to a fifth of the former cost. Large areas in the South were turned into cotton plantations. Popu.

¹See Cleveland and Powell, *Railroad Promotion and Capitalization*, 16-23. This monograph was prepared for the *History of Transportation*.

lation spread westward into those sections suitable for cotton culture, and new lands were brought under cultivation. The export of cotton increased from 138,000 pounds in 1792 to nearly 64,000,000 pounds in 1807, while the export of tobacco decreased.

In the North an immediate effect of the European wars was an increase in the demand upon the grain-growing regions of the West for wheat. In England population had become increasingly urban and industrial, and large areas of agricultural lands had been devoted to sheep-raising. England had become an importer of foodstuffs and during the Napoleonic wars her demand turned to the United States. Here, in consequence, the average price of flour per barrel rose from \$5.40 to \$9.12. Such an inducement to grain-growing caused a sudden tide of migration to flow towards the rich unclaimed lands, especially into western Pennsylvania, western New York, and the more remote regions along the Ohio and the shores of Lake Erie. The settlers on these new lands, however, soon discovered that in competing for a share in the prosperity with their more easterly neighbors they were at a disadvantage, because of the excessive cost of transportation which their produce must bear. Grain was a comparatively low-priced product, and under favorable conditions the cost of carriage was at least \$10 a ton per hundred miles hauled. Over many roads it was higher. Such costs were prohibitive of long hauls, and even at the new price-level left large areas in New York, Pennsylvania, and Maryland outside the range of profitable use. Western Virginia, Tennessee, Kentucky, and Ohio were almost entirely cut off from a market, except by way of the Mississippi.

It was this situation which gave Washington, Jefferson, and other public leaders concern for the political integrity of the nation. An empire of rich territory, isolated from the Atlantic seaboard, and with no outlet except by way of New Orleans or the St. Lawrence, was being rapidly occupied, and no systematic effort was being made for its relief or to insure its loyalty. The isolation of the West was felt to be a menace to that national unity which meant national life. The industrial and commercial seaboard, the cotton-producing South, and the grain-producing trans-Allegheny regions, developing as they were into three separate social entities, were beginning to conceive of their interests as being in some respects mutually antagonistic. Manufacturing was relatively undeveloped and politically impotent, but under the influence of a new school of political economy—the so-called “national school”—and from motives of obvious self-interest, the manufacturers united with the farmers to overcome the indifference of the shipping interests in the agitation for internal improvements. Moreover, the new sections of the country were becoming so important in population that their interests could not be politically disregarded, and it was to satisfy the demands of the West, as well as the demands

originating in the East, that Gallatin submitted the report of 1808, with its comprehensive scheme of canals and roads, to be further noted below.

The embargo and the events leading up to the War of 1812, by interfering with the coastwise shipping and the neutral trade, still further accentuated the demand. The resultant social movement developing out of these complex economic and political forces, in its practical consequences, profoundly affected every one of the older States, as well as the entire Mississippi Valley.

As production increased in any community, two distinct services were involved in the transportation problem: first, the local problem of collecting products at centers of distribution within the district; second, the national problem of providing practical routes and facilities for reshipment to distant markets. To a very considerable extent it is true, however, that the solution of the national problem, in so far as it depended upon Government aid, was undertaken by the States which were competing for the western trade. Obstacles to cheap, rapid, and safe transportation of goods from the seacoast over the long carriages to the interior points of distribution occasioned in the West high prices on goods brought in from the East. Under normal conditions the East received large importations from Europe, for which the enlarging field of prospective buyers in the West provided a profitable market, and on this account, as well as others which have been noted, the East became interested in securing better connections with the West. Unfortunately the rivalry among the principal seaboard cities in the contest for the western trade, while it occasioned a greater interest in the westward extension of transportation facilities, became at the same time a cause of embarrassment and failure in the effort to develop a system of improvements based upon national interest.

It will be apparent from the foregoing account that the many natural obstacles encountered in the endeavor to develop an extensive domestic trade between the widely separated sections of the country were very great. As settlement advanced beyond the line of navigability, in the case of each important river flowing into the Atlantic, facilities for transportation of cargoes around the falls were demanded in order to extend river transportation farther inland.

As long as settlement was confined to the tidewater district, trade (except such as was purely local) consisted in direct interchange of goods with Europe, traffic between the colonies being inconsiderable. The exigencies of the Revolutionary era disclosed the isolation of the several colonies from one another and the difficulties of colonial intercourse, while the interference with foreign trade directed attention to intercolonial water communication. Gallatin in his report outlined and advocated a complete system of inland water-routes which would bind together the seaboard States.

As the population of the uplands, *i. e.*, the Piedmont Plateau region, increased, the needs for improved communication with the tidewater became increasingly urgent. In Virginia, Maryland, and the Albemarle district of North Carolina this region became a tobacco area, and facilities were demanded for getting this product to the navigable rivers and the Chesapeake. South of the tobacco area lay the eastern cotton belt, stretching to central Alabama, and here it was necessary to find some means of moving the cotton to the coast and of procuring supplies, either from the coast across the pine barrens or from the northwest across the mountains.¹

Throughout the period the Appalachian Mountain system, as a whole, presented the great obstacle to be overcome. This system, as has been noted, cut off the seaboard from the interior. The pioneer farmers of the Ohio Valley were compelled in the early days to ship their market produce down the Ohio and Mississippi to New Orleans and thence abroad or around the coast to the cities of the North. It has been shown how difficult and expensive was the process of wagoning goods from Philadelphia and Baltimore across the mountains to the Ohio Valley. The great cost of transporting his crops to market and of bringing in goods from the East left the western farmer little profit and prevented a rapid appreciation in the value of his land.

The great Appalachian Valley, bounded on the east by the Blue Mountains and on the west by the Allegheny Front, was settled in the main by pioneers entering from the north and moving southward. Hedged in by the obstructing mountains on either side, the population in this region sought to establish communication with the West and with the eastern seaboard. The streams of the Appalachian system provided natural routes both into the interior and to the coast, but if these routes were to be utilized, it was necessary that they should be improved. Important rivers, such as the Hudson, the Mohawk, the Delaware, the Susquehanna, the Schuylkill, the Potomac, and the James, crossed the ridges at right angles. Some of the rivers of the northern Appalachians flowed into the Atlantic and others into the Ohio, the divide being in many cases conspicuous. The Delaware, the Susquehanna, and the Potomac, each rising west of the Allegheny Front, would provide convenient routes for traffic if they were made navigable to points nearer their sources.

By marking the limit of river navigation, the fall-line determined the locations of the trade centers, and in the earlier period transportation facilities for the traffic between these centers and the coast were demanded. Before the beginning of the nineteenth century, however, the primitive facilities provided for this traffic had become inadequate.

¹Phillips, "Transportation in the Ante-Bellum South," in *Quarterly Journal of Economics*, XIX, 435, May 1905.

Finally, industries, which were becoming in a greater degree localized and sectional, required ways and means of commercial interchange over more extended areas, and the effort to broaden markets, which gave rise to many local problems, became a factor also in the movement for a system of land and water routes organized nationally.

GALLATIN'S REPORT OF 1808.

So insistent had the numerous demands for improvements become by 1807 that upon March 2 of that year the Senate passed a resolution directing the Secretary of the Treasury to prepare a report, and Gallatin, thus directed, made his report 13 months later, on April 4, 1808.¹ This constituted the first great official utterance of any branch of the National Government upon the subject, and it is universally conceded to be an admirable summary of the various schemes which were at the time occupying public attention, as they continued to do for a period of years subsequently.

The proposals made by Gallatin in his report embraced the local schemes of improvement which were being urged at the time, and combined these independent projects into a national system. In general, his proposals grouped themselves under the four following heads:

- I. Great canals along the Atlantic seacoast, uniting New England with the South.
- II. Communication between the Atlantic and the western waters.
- III. Communication between the Atlantic, St. Lawrence, and the Great Lakes.
- IV. Interior canals and roads.

Under I, emphasis was laid upon the fact that inland navigation between New England and the South was interrupted by four necks of land: (1) Barnstable in Massachusetts; (2) New Jersey from the Raritan to the Delaware; (3) between the Delaware River and the Chesapeake Bay; (4) the neck between the Chesapeake and Albemarle Sound. He therefore suggested canals at these four points. Continuous inland water communication between the East and the South would thus be established. A ship might enter the first canal at Boston, pass through the bay of Rhode Island, Long Island Sound, and the harbor of New York, reaching Brunswick on the Raritan, where it would journey through the second canal to Trenton on the Delaware, pass down the Delaware to Christiana or Newcastle, then through the third canal to Chesapeake Bay, up the Elizabeth River, through the fourth canal, enter Albemarle Sound, and then, by Pamlico Cove and Bogue Sound, reach Beaufort and Swansborough in North Carolina, then by inland navigation through Toomer's and Stumpy Sounds to Cape Fear on the coast.

¹*American State Papers, Miscellaneous, I, 724-921.*

Under II, he proposed canals as follows:

- (1) On the Santee, embodying the Wateree Canal (already projected and later completed), commencing at Camden, and the Santee Canal, uniting the Santee with the Cooper River, which empties into the ocean at Charleston.
- (2) Canal around the Falls of the Roanoke.
- (3) The James River Canal (already begun).
- (4) Various improvements of the Potomac.
- (5) Canal around the Falls of the Susquehanna, a work begun in the interest of Philadelphia and Baltimore merchants.
- (6) Canal from Muscle Shoals, connecting the Tennessee with the Tombigbee River, thus securing communication with Mobile.

The East was to be further connected with the West by four roads from the four important rivers—the Allegheny, Monongahela, Kanawha, and Tennessee—to their corresponding Atlantic rivers—the Susquehanna or Juniata, the Potomac, the James, and either the Santee or Savannah respectively—leaving the States to improve the communication thence to the coast.

Under III it was urged that the communication between the Atlantic and the Great Lakes be perfected by a pair of canals with parallel roads connecting the Hudson with Lake Champlain and the Mohawk with Lake Ontario, including also the building of a canal around Niagara Falls.

Under IV was enumerated a complete list of interior canals, such as the Merrimac, Middlesex, Schuylkill and Delaware, Schuylkill and Susquehanna, Appomattox, Neuse and Beaufort, North Carolina, Cape Fear, and the Carondelet at New Orleans.

Gallatin displayed in the report the characteristics of a shrewd politician, as well as of a statesman of comprehensive foresight. Although a citizen of western Pennsylvania, which was especially interested in certain projects, he realized that the interest of the different sections of the country must be united in support of a national scheme of improving transportation facilities as a condition of securing legislation which would benefit western Pennsylvania or any other section. A cursory glance at the map will show that nearly all of the States would be recipients of favors at the hands of the General Government by such proposals as he brought forward.

Gallatin suggested that all of the proposed improvements could be accomplished at an expense of about \$20,000,000, and accepting his further estimate of a yearly surplus of about \$2,000,000 available for this purpose, the vast undertaking could be accomplished in 10 years. He showed how the benefits to be derived from any given improvement on investigation were dependent upon the completion of other improvements, and closed his report with the assertion that the General Government alone was competent to undertake the work outlined.

EFFECTS OF THE WAR OF 1812.

As has been noted, the events occurring in the years immediately following the publication of Gallatin's report and culminating in the War of 1812 advanced the cause of internal improvement, but the war itself was an event of prime importance, both in its direct effects and in its indirect consequences. The war disclosed the great importance of the West. New lands taken from the Indians became available for settlement, and a new rush of settlers to the West followed. The volume of produce to be moved to distant markets increased, and coincidentally the demand for better connections with the East and South increased. The war made clearly apparent the inadequacy of existing facilities for communication. As a direct consequence of this inadequacy, campaigns in the West had been seriously hampered and the cost of conducting them tremendously increased.¹

This experience furnished an argument for internal improvements which was frequently used upon the floor of the House.² In many instances the enthusiasm resulting from the war was productive of national measures involving an extension of the functions of the Federal Government, and under its influence many came to believe that active participation of the Federal Government in developing a system of internal improvements was not only expedient but right.

The war, in fact, effected profound changes in the whole economy of the country. From colonial times the United States had continued in economic dependency upon Europe, especially as regards manufactures. The country was suddenly thrown more completely upon its own resources. At the close of the war, Webster and other statesmen found a changed world.³ Having developed a great neutral trade before the Napoleonic era, the United States for a period of years profited largely as a carrier of ocean freights. Moreover, the demand in Europe for American breadstuffs had warranted their exportation in large quantities.⁴ By these means of payment the country had been enabled to increase the volume of imports from Europe. At the close

¹*Cong. Debates*, 18th Cong., 2d sess., I, 676. Benton states "sixty millions had been expended for transportation during the late war, over such abominable roads as to make a cannon cost one dollar a pound. Flour for the supply of the army cost in some instances forty to fifty dollars a barrel." *Cong. Debates*, 19th Cong., 1st sess., II, 1511; see also Clay, *Works* (Federal ed.), I, 464; see also *American State Papers, Military Affairs*, II, 511, for tabulations of cost of transportation during the War of 1812; Perkins, *Historical Sketches of the United States, 1815-1830*, p. 357. From the *Public Documents Relating to the New York Canals*, xl, we learn that pieces of ordnance purchased for \$400 at the foundries or at the military stores cost the Government in some instances \$2,000 when delivered at the frontier. A barrel of pork or beef often cost the Government \$126. At one time during the war, sugar from Louisiana cost \$30 per 112 pounds, and cotton 45 cents per pound. In *American State Papers, Military Affairs*, IV, 141, is found a statement to the effect that the expenses of transportation during the war amounted to a sum sufficient to pay the expense of every canal and road opened in New York and those planned in Ohio and Pennsylvania.

²*Annals of Congress*, 15th Cong., 1st sess., XXXII, 1399.

³Webster, *Writings* (National ed.), VI, 28.

⁴See Sterns, "The Foreign Trade of the United States from 1820 to 1840," in *Journal of Political Economy*, VIII, 37-38, Dec. 1899.

of the war, however, Europe began to assert her independence of American breadstuffs, and by hostile navigation laws sought also to destroy the supremacy of the American merchant marine.

But that was not all. Coincidentally with the loss of foreign markets the home market was invaded. Upon the signing of the treaty of peace, European vessels were dispatched to American ports laden with English manufactures, and the American market was flooded with foreign goods at prices which American producers could not meet. The industrial and commercial distress which immediately developed led to the adoption of a policy—partly in retaliation—of protection to those industries which had established themselves during the war and in the years preceding the war. The tariff act of 1816 may be regarded as initiating this policy.

The increased westward movement after the war cooperated with these influences to transfer our economic activity from the ocean to the interior and from foreign to domestic commerce.¹ It took some time for the country to realize that the enormous natural resources of the West presented a large field for the application of capital.

At this critical period, following the lean years and financial exigencies of the war, an accumulation of funds in the treasury provided a free surplus available at the discretion of Congress for public works. Under the act establishing the second National Bank, the United States Government obtained a bonus fund and secured dividends from its share of stocks. The enormous customs revenue of 1816² exceeded ordinary requirements, and ran into a surplus, which was further augmented by the proceeds from the increasing sales of public lands.³

It seemed probable that the dimensions of the surplus would prove embarrassing to the Government.⁴ Calhoun thereupon sought to inaugurate a system of improvements. On December 16, 1816, he moved that a committee of the House be appointed to inquire into the expediency of setting apart the bonus and net proceeds of the National Bank as a permanent fund for internal improvements.⁵ A bill was immediately reported in the House to that effect.⁶ The bill, as introduced by Calhoun, provided merely for the pledging of money for the construction of roads and canals, subject to such specific appropriations as Congress might thereafter make.

¹Callender, "The Early Transportation and Banking Enterprises of the States in relation to the Growth of Corporations," in *Quarterly Journal of Economics*, XVII, 129-130, Nov. 1902.

²Dewey, *Financial History of the United States*, 161. "The imports, valued at less than \$13,000,000 in 1814, rose to \$147,000,000 in 1816." The figure of 1816 was not reached again until 1850.

³*American State Papers, Public Lands*, III, 555-558; IV, 804-805; *Niles' Register*, XI, 107, Oct. 12, 1816.

⁴Crawford to Gallatin, Oct. 27, 1817, in Gallatin, *Writings*, II, 54. Secretary of the Treasury Dallas, in reporting, Jan. 20, 1816, to the chairman of the Senate Committee on Roads and Canals, states that "if the revenue were permanently established on the footing proposed in the Department report of December 6, 1815, and if the public expenditures did not exceed the annual amount therein stated, there would be an annual surplus revenue of about \$4,000,000 available for a standing appropriation for the construction of roads, canals," etc.

⁵*Annals of Congress*, 14th Cong., 2d sess., XXX, 296.

⁶*Ibid.*, 361.

There followed a long debate, in which each State and section contended for advantage. New York did not wish the Cumberland Road extended into Ohio, lest it should divert Western trade to Baltimore and depreciate the Erie Canal. New England had built her own roads and did not see why she should pay for roads in other sections of the country. A Representative from Louisiana introduced the proposition that the fund be distributed pro rata to the States, to be applied by them to internal improvements. Madison vetoed the bill as unconstitutional.

PRESIDENT MONROE'S MESSAGE OF 1817.

With the appearance of many new members in the Fifteenth Congress, it was expected that the question of internal improvements would arise again.¹ Every President had been strongly in favor of better communications between the different sections. Jefferson and Madison, consistently with their interpretation of the powers of the National Government, believed that an amendment to the Constitution was necessary. Monroe, having felt the pulse of the country, in his message to Congress conceded the benefits of a system of roads and canals, but he also declared it to be his settled conviction that the Constitution must first be amended.² This brought the matter before the House, and that portion of the message relating to internal improvements was referred to a committee of which Henry St. George Tucker of Virginia was chairman. The committee, by its report of December 15, 1817,³ initiated one of the most important constitutional debates of that interesting period which has been so often designated the "Era of Good Feeling." The debates upon internal improvements and those upon the tariff give ample evidence that even though there were at this time no well-defined political parties, yet in the varying shades of political beliefs and interests there were present the active elements which would soon coalesce in the formation of parties. Evidence of a reaction against the spirit of nationalism, for example, is found in the frequent protests against the tendencies of Congress toward loose construction in the increasingly loud denunciations of the decisions rendered by Chief Justice Marshall, and in the tendency of the several sections of the country to follow each its own interests, either independently or jointly with one another.

Writing of this period, Turner states:

[The] "sections underwent striking transformations and engaged, under new conditions, in the old struggle for power. Their leaders, changing their attitude towards public questions as the economic conditions of their sections

¹Letter of Crawford to Gallatin of Oct. 27, 1817, in Gallatin, *Writings*, II, 54. This letter showed Crawford did not favor the bonus bill, but was inclined to think abundant revenues were accruing which might allow adoption of a system of internal improvements.

²Richardson, *Messages and Papers of the Presidents*, II, 18.

³*Annals of Congress*, 15th Cong., 1st sess., XXXI, 451-460.

changed, were obliged not only to adjust themselves to the interests of the sections which they represented, but, also, if they would achieve a national career, to make effective combinations with other sections.”¹

Thus the “Era of Good Feeling” was one not of party *rapprochement* on questions of general policy, but rather of party disintegration and realignment in the face of new interests developing locally. The committee’s report on the message constitutes the second great document upon the subject of roads and canals—Gallatin’s being the first—and excelled in argument all the speeches during this session of Congress by the advocates of internal improvements. At the very outset the cause of the legislative department of the Government is espoused by declaring that the President’s position should not be permitted to have any influence upon the disposition of Congress to legislate upon the question. If the constitutional majority of the two Houses should differ from the executive, it was asserted, the opinion of the latter must yield; for if, from a deference to an opinion promulgated in an executive communication, Congress should enter on the consideration of the question, it might happen that the opinion of the President would prevent the enactment of a law, though there should be in both Houses a constitutional majority in its favor.

The committee found precedents in support of its contention that Congress was empowered to undertake the construction of roads and canals in: (1) The Cumberland Road act of March 29, 1806, with the amending acts of 1810, 1811, and 1815, each approved by the President. The three latter acts, it was stated, appropriated \$210,000, payable out of any funds in the Treasury and reimbursable. (2) The act of April 21, 1806, establishing a road from Nashville, Tennessee, to Natchez, Mississippi. (3) The act of March 31, 1817, establishing a road from Reynolds, Tennessee, to the Mississippi, in which the previous consent of the State of Tennessee was omitted and the expense of the road was to be defrayed out of the public treasury of the United States without providing for its reimbursement. (4) The executive order of the President under which the military road from Plattsburg, New York, to Sacketts Harbor was improved without receiving the assent of the State or the permission of Congress. From these precedents the committee concluded it was fair to infer that the Constitution conferred upon the General Government a power, in some cases, to make roads and to defray expenses out of the United States funds.

The committee then laid down the following propositions which they and their adherents would endeavor to prove: That Congress had power (1) to lay out and construct post-roads through the several States with the consent of the respective States; (2) to open, construct, and improve military roads with the assent of the States interested; (3) to cut canals through the several States, with their consent, for promoting

¹Turner, *Rise of the New West, 1819–1829*, p. 6.

and securing internal commerce. At the outset the committee disavowed the use of the "general welfare" clause of the Constitution and admitted that it must appear that the powers contended for were expressly granted, or that they were both necessary and proper for carrying into execution some expressed power. In this they were Republicans (this party name was then applied to men holding such views), although somewhat in advance of Jefferson's position upon the constitutionality of the National Bank.

The committee reported a bill practically identical with the bonus bill vetoed by Madison. Again the struggle was over something very different from the country's needs. In this instance it involved an effort on the part of Congress to establish the supremacy of the legislative over the executive department of the Government. The measure was lost.

In 1819 a bill was passed authorizing the employment of the army in the construction of roads, and by the labor thus made available a number of important roads were built. The general depression, however, which prevailed throughout the country in 1819-1820 prevented the initiation of internal-improvement work.¹ Moreover, in December 1819, the announcement was reluctantly made by Crawford that there was a deficit in the Treasury. Heated debates arose in Congress, and the demands for economy temporarily overcame those for internal improvements. But the pressure of economic forces could not be held permanently in check. Reduction in the European demand for our agricultural products and the high cost of transporting them made exportation increasingly unprofitable and induced efforts to find markets at home. It was speciously argued that with our population estimated to be doubling every 25 years, and European population only every 100 years, our capacity for economic production was certain to outstrip rapidly Europe's capacity for consumption.² The belief was growing that the production of raw products in this country provided a surplus for export which exceeded the demand for consumption in Europe and that this condition necessitated a diversion of our productive forces into home manufactures.³ To effect this diversion it was believed to be necessary first to protect the agricultural and manufacturing areas of the United States from the cheaper products of Europe; then, by improving ways and means of transportation, to secure to these areas cheap, safe, and rapid transmission of their products to

¹See Catterall, *Second Bank of the United States*, chap. iii; Sumner, *History of the Currency*, I, chaps. iv-vi; Phelan, *History of Tennessee*, 277; Clay's speech of April 26, 1820, in *Annals of Cong.*, 16th Cong., 1st sess., XXXVI, 2035; Bishop, *History of American Manufactures*, II, 249-251, for facts regarding the commercial revolution of 1819-20; Dewey, *Financial History of the United States*, chap. vii. The best recent account of the crisis of 1819 and its results is found in Turner, *Rise of the New West, 1819-1829*, pp. 134-148.

²See Clay's speech of April 26, 1820, on the tariff bill of 1820, in *Annals of Cong.*, 16th Cong., 1st sess., XXXVI, 2035.

³New York, New Jersey, Pennsylvania, and Ohio transmitted, in 1820, earnest petitions to Congress for the encouragement of home industry, *Annals of Congress*, 16th Cong.

home markets. Thus Clay found an opportunity to associate the internal-improvement question with the protective-tariff issue.¹

NEW ENGLAND.

In the early years of the nineteenth century New England, whose interests had been largely maritime and commercial, was developing also along industrial lines, and the increasing manufacturing population furnished new customers for the produce of New England farms located near the industrial centers.² Unable to compete in the production of wheat and flour, however, New England farmers soon yielded this traffic first to the farmers of New York, and later to those of Ohio, and devoted themselves largely to raising garden products and fruit for the local market. This situation underlay the demand in 1825 for connection with the Erie Canal.

In proportion as New England became interested in the opening of traffic routes, her opposition to the inauguration of internal improvements by the National Government lessened. Moreover, with the growth of population and wealth in other sections, her influence in national affairs became less potent. As regards employment of the resources of the Federal Government in the construction of roads and canals, therefore, her opposition became at the same time less insistent and unanimous, and less effective.

In Massachusetts and Vermont, earlier than elsewhere, sheep-raising had become an important occupation, and coincidentally the woollen industry developed.³ Massachusetts alone in the years 1820 to 1821 increased its production of woolens from less than \$300,000 to over \$7,300,000,⁴ and improved facilities were sought first for the transportation of raw materials to the factories and for the distribution of finished products. The trade centers of New England were Portland, Portsmouth, Boston, Providence, Hartford, and New Haven, but New England trade extended also to New York, Montreal, and Quebec. Improvements intended to enable each of these places to compete advantageously for New England business were proposed. The favorable situation of New England for coastwise trade with the South in securing raw cotton and other materials for its factories, and for direct trade with Europe, required for its complete exploitation by the commercial and industrial classes the projection of local transportation measures. No effective interest was taken in developing trade with the West until the completion of the Erie Canal.

¹*Ex. Doc. No. 308, 1831-32, 22d Cong., 1st sess.; Adams, History of the United States, IX, chaps. iv, vii.*

²Turner, *Rise of the New West, 1819-1829*, p. 14.

³Sterns, "The Foreign Trade of the United States from 1820 to 1840," in *Journal of Political Economy*, VIII, 482, Dec. 1899.

⁴Turner, *Rise of the New West, 1819-1829*, p. 13.

MAINE.

As early as 1816, the absence of immigration to Maine, then the only section of New England that really represented frontier, was attributed to the neglect of internal improvements.¹ A canal had been constructed in 1795 between the Kennebec River and Casco Bay, along the line of the Stevens River, but aside from this little had been accomplished in this section and the country was practically without roads. Soon after Greenleaf's report, the legislature of Massachusetts laid the foundation of a system of internal improvements which would open up the interior of Maine and encourage settlement, but conflicting sectional interests interfered. After learning the extent of possible navigation, the nature of obstructions, the location of portages, etc., the legislature expended much time and energy in the consideration of applications for and of objections to projected improvements, and in discussions of such merely local facilities as turnpikes, bridges, locks, and mill-dams. A company was incorporated in 1821 to build the Cumberland and Oxford Canal to connect the waters of Sebago Pond with Portland Harbor. Along this water communication of 40 miles, with an artificial canalization of 20, it was expected that timber, wood, stone, ashes, sand for glass manufacture, and produce would move out of the country, and that plaster, fish, and merchandise would come in. The State devoted the proceeds from lotteries to the canal, in addition to specific appropriations. The canal was not completed until 1829. Its extension to the Androscoggin and the Chaudiere had been proposed in the early stages of the work, but this extension was not undertaken.²

Since the northern part of Maine was, as yet, undeveloped, improvements were projected in the central and especially in the southern part of the State. An application had been made to Congress for an improvement of the navigation of the Kennebec River. A canal also had been outlined from Bangor on the Penobscot across to the Kennebec and Dead River to the Chaudiere, whence vessels could move to the St. Lawrence.³ Large vessels were able to ascend the Penobscot to Bangor, while navigation on the Kennebec extended only to Waterville, located some distance below the point where the proposed canal would leave the Kennebec. Unless the river could be made navigable farther up, Bangor would attract the trade of the upper Kennebec. In either case Portland, on the coast, would receive most of this trade unless another canal could be cut from the point on the Kennebec which would be reached by the above-mentioned canal. This second canal, extending to Lake Winnepesaukee and the canal on the Merrimac, which was finished in 1825, would induce the trade to take a new direction, passing down the Merrimac to Newburyport or via the Middlesex Canal to Boston.

¹Greenleaf, *Statistical View of the District of Maine*, 69-128.

²*American Almanac*, 1830, p. 236.

³Armroyd, *A Connected View of the Whole Internal Navigation of the United States*, 27.

NEW HAMPSHIRE.

In New Hampshire internal improvements related chiefly to the Merrimac and Connecticut Rivers. From 1776 to 1823, 20 canal companies were incorporated in the State, but some of these were never organized, and not all of those organized became operating companies. Three canals on the Connecticut River common to both New Hampshire and Vermont—the Bellows Falls, Water Quechee, and White River Canals—were constructed at a cost of \$36,000.¹ The Merrimac was made navigable by numerous locks and canals at a total cost of \$627,000.

The Amoskeig (Amoskeag) canal was the greatest work of the kind on the Merrimac navigation and was finally completed in 1816 with the rebuilding of a portion at a cost of \$10,000. The whole cost of the canal, including the \$10,000 expended in 1816, was \$60,000. It was first constructed chiefly of wood within the natural banks of the river, but was not a success as thus constructed and hence was replaced by a canal in the banks around the falls. It was a mile in length and had 3 locks of white-oak timber and white-pine plank and overcame a fall of 45 feet. Mention is made of 3 locks, each 100 feet long, 10 to 11 feet wide, and 8 feet lift.² In 1817 the canals of the Merrimac were said to be yielding a net income of 6 or 7 per cent.

In addition to the improvement of the Merrimac, the northern and western sections of New Hampshire wanted canal and river improvements that would make the Connecticut navigable from its headwaters in the northern part of the State.³ This would direct the trade down the Connecticut. A canal was planned from Haverhill, the point in New Hampshire to which the Connecticut was being made navigable, to Plymouth on the Merrimac. This would enable the Merrimac towns and Boston to divert the trade from Hartford. By building the proposed canal from a point on the Connecticut above Haverhill to Lake Champlain, New York could make a direct bid for New Hampshire trade. A company, incorporated in 1824 for improving the navigation of the Connecticut, made little progress.

A company had been chartered in 1811 to cut a canal and build locks around all the falls between Winnepesaukee Lake and the Cochecho branch of the Piscataqua, below the landing in Dover, a distance of 27 miles. Although the charter had been renewed, the canal was not finished. A proposition to construct a canal between the Merrimac and Connecticut Rivers through Sunapee Lake had been considered for a long time, but a survey in 1816 proved the enterprise to be impracticable, as the cost would have amounted to \$2,000,000.⁴

¹Farmer and Moore, *Gazetteer of the State of New Hampshire*, 1823. p. 14.

²*Public Documents Relating to the New York Canals*, 231-232; Spofford, *A Gazetteer of Massachusetts*, 25; U. S. Census 1880, IV, *Transportation*, 756-761.

³Farmer and Moore, *Gazetteer of the State of New Hampshire*, 109.

⁴*Ibid.*, 15.

VERMONT.

Trade in Vermont, which had at first moved towards Canada, later moved in part down the Connecticut River. Previous to 1820, the White River Canal and the Bellows Falls Canal—small canals around the falls of the upper Connecticut and common to both New Hampshire and Vermont—had been constructed.¹ The produce of the southwestern part of the State went down the Hudson River to New York City. Internal improvements in Vermont had thus made very little progress.

The streams of Vermont directed trade to the St. Lawrence and Montreal, down the Connecticut to Hartford, and to the Hudson and New York City.² The southwestern part of the State had the advantage of good water communication with the Troy (New York) market. The roads leading to the Hudson were excellent for the times. In the winter especially, when the roads were smooth with snow and the Hudson was bridged with ice, oxen and horse teams were kept busy going to the Albany market.³ Much trade in ship-building developed in the vicinity of Lake Champlain. Inaccessible to any water-route leading to a New England port, the timber trade of this district went to Europe by way of Lake Champlain and the St. Lawrence.⁴ Sailing vessels of nearly every description plied the lake, picking up cargoes of wheat and potash and other products of the Champlain Valley and bringing in return merchandise from the seas.⁴

Northwestern and a large part of western Vermont were tributary to Montreal and Quebec. For the remaining western part, having water and road connections with the Hudson, New York was a more accessible market than was Boston for the eastern part. An attempt to deflect to the Connecticut the trade of western Vermont that was going to Montreal was made by planning a canal from Rutland to Windsor, on the Connecticut. The early completion of the more important Champlain Canal enabled New York to secure much of this trade.

In 1825 canal commissioners were appointed to cooperate with the United States engineers in examining routes for canals. Surveys were made, but little more was accomplished, and in 1830 little expectation was entertained that further canal constructions would be undertaken.⁵

MASSACHUSETTS.

The most important works of internal improvement in New England were those of Massachusetts, intended in general to bring trade to her own capital, which was then, as now, the metropolis of that section

¹U. S. Census 1880, IV, *Transportation*, 756, 761.

²See maps in Tanner, *A Description of the Canals and Railroads in the United States*; also Williams, *History of Vermont*, I, 39.

³Collins, *History of Vermont*, 145; Thompson, *Gazetteer of Vermont*, 15.

⁴Thompson, *Gazetteer of Vermont*, 15.

⁵*American Almanac*, 1830, p. 148.

of the country. Minor canals had been constructed at an early date. In 1652, 1682, and 1694 ordinances were passed by the town of Ipswich relating to cuts near the town and in connection with Chebacco River and other streams.¹ A company incorporated in 1792, under the title of "The Proprietors of the Locks and Canals on the Merrimack River," began in 1793 construction of the first canal connected with the Merrimac, around the Pawtucket Falls, leading into the Concord River, and thence to the Merrimac at Chelmsford. Originally this canal was 30 feet wide and 3 feet deep, but in 1821 it was made 90 feet wide and 4 feet deep.² In 1791 surveys were made for canals to lead from Boston westward. In the year following a company was incorporated, but no work was initiated until 1825.³

The leading men of Hampshire and Berkshire Counties in western Massachusetts had cooperated in building a canal at Turner's Falls at Montague on the Connecticut.⁴ This secured to the western districts tributary to the Connecticut an unobstructed navigation of the River. The South Hadley Canal was constructed in order to pass a fall of 50 feet in the Connecticut at that point. It was begun in 1792 and was 2 miles long, with 5 locks.⁵ A feature of this canal was a cut through solid rock, over 40 feet deep and 300 feet long. An inclined plane was first constructed for raising and lowering boats, but was later replaced by locks.

Boston was engaged in efforts to reclaim the trade of Massachusetts which was being lost to Hartford via the Connecticut River. The attempt was made also to secure more of the trade of the Connecticut by the projected Boston and Connecticut or Chicopee Canal and its continuance to the Hudson. By the canal passing through Worcester, the Massachusetts terminus of the Blackstone Canal, it was thought Boston might stop the drainage of Worcester trade to Providence.⁶ It was proposed to build a canal from Northfield, down Miller's River to the Connecticut, and then westward to New York. This would tap the Connecticut just above the point where the Westfield and Northampton Canal connected with the Farmington, which was built to withdraw Connecticut River trade from Hartford to New Haven.⁷

¹Felt, *History of Ipswich, Essex and Hamilton*, 54. "Those who helped to make the cut were to go through toll free. Others were to be charged 3d. in money for a cord of wood, load of hay, or ton of other loading."

²U. S. Census 1880, IV, *Transportation*, 756; *American State Papers, Miscellaneous*, I, 827-828; Spofford, *Gazetteer of Massachusetts*, 95.

³Bliss, *Historical Memoir of the Western Railroad*, 3.

⁴Holland, *History of Western Massachusetts*, 304.

⁵Mitchell, *Compendium of Internal Improvements in the United States*, 13; Carey and Lea, *Geography, History and Statistics of America*, 103; Spofford, *Gazetteer of Massachusetts*, 1828, p. 96.

⁶Armroyd, *A Connected View of the Whole Internal Navigation of the United States*, 13.

⁷Earle, *A Treatise on Rail Roads and Internal Communication*, 107. The Farmington Canal Company was incorporated by the legislature of Connecticut in 1822; Armroyd, *A Connected View of the Whole Internal Navigation of the United States*, 7.

All the improvements actually undertaken by New England before 1825 were local measures. No considerable interest was yet shown in a national system of improvements, though the number of local enterprises projected¹ may have made New England more willing to receive national assistance, when it became evident that Congress was inclined to broaden its view as to the measures deserving of national aid.

The advantages to be secured by cutting channels across the several headlands along the coast, facilitating the passage of coast vessels by shortening the distance as well as by rendering navigation much safer, were pointed out at an early date. As has been noted, a complete system of such improvement along the coast was planned by Gallatin in his report of 1808. A canal from Buzzard's Bay to Barnstable Bay through the isthmus of Cape Cod was one of the most important of these proposed improvements. Various routes were proposed, and an examination of the ground was made in May and June 1791 by James Winthrop for the State of Massachusetts.² A small canal had been opened about 1757 in Buzzard's Bay, from Great Pond through Long Pond to a creek discharging near Oyster Islands, but designed to open a passage for herring and not for the passage of boats. Efforts had also been made at an early date to keep, improve, and maintain a harbor accessible for boats in Barnstable Bay, but this had been possible only at the cost of much labor. The wharves were broken and the entrance was often blocked or changed by storms. During the Revolutionary War the transport of goods across this isthmus had become much more important as a way of avoiding British vessels which were patrolling the coast. At this period the shortest route across extended from Stetson's Wharf in Barnstable Harbor to Homer's Wharf in Hyannis Harbor, Lewis Bay, a distance of 4 miles. Notwithstanding the desirability of effecting a communication across this route by water, the difficulties were so great that Gallatin in his report suggested that a canal across the isthmus was impracticable and that the only feasible project was that for a canal from the harbor of Boston to Narragansett Bay. This latter project was pronounced feasible by a committee which had been appointed by the State of Massachusetts to make an examination, 1806 to 1808.³ In 1818 a company was incorporated to execute the project. The canal was intended to be of sufficient depth to allow the passage of vessels drawing 10 feet,⁴ but it was never built.

¹*Niles' Register*, XXVIII, 161, May 14, 1825, gives the following as works then contemplated by New England: (1) canal from New Haven to Northampton; (2) from Providence to Worcester; (3) from waters of Long Island Sound through the valley of the Connecticut River to Vermont, Lake Memphremagog, and Canada; (4) from Boston to the Connecticut River; (5) across Cape Cod.

²*American State Papers, Miscellaneous*, I, 725.

³*Ibid.*, 725 *et seq.*

⁴Carey and Lea, *The Geography, History and Statistics of America*, 104.

A company was incorporated in 1820 to make a canal from Ipswich to Essex. This canal extended from Fox Creek to Chebacco River, about one-half mile, and was made navigable in 1821. The cost of construction amounted to about \$1,100 and the undertaking proved to be a profitable one.¹

By far the most important of the New England works of internal improvement, however, and the first extensive canal ever completed in the United States, was the Middlesex Canal. Prior to initiation of work on the Erie, the Middlesex Canal was pronounced the best artificial waterway in the United States.² As given by different authorities, the date of incorporation of the company which constructed this canal varies from 1789 to 1793.³ The original object was to open by means of the Merrimac River an extensive inland navigation to the lakes of New Hampshire and still farther into the interior by the Western Branch and Baker's Rivers. By 1804 this object was partially accomplished "after 10 years of unremitted perseverance" and at a cost of \$914,142.42, by its construction from the Merrimac River, 5 miles within the Massachusetts boundary-line, to the banks of the Charles River opposite Boston, a little less than a mile from that city. The canal included a total length of 27 miles and was 30 feet wide at the surface, 20 feet wide at the bottom, and was calculated to carry boats of 25 tons and drawing 3 feet of water. It was carried over 7 rivers and streams by aqueducts and was fed by the Concord River, which it crossed on the surface. Much remained to be done in 1804, however, both to overcome the obstructions in the river and to lead the public, long habituated to land carriage and totally inexperienced in the use of canals, to turn its attention to this great accommodation.

¹Felt, *History of Ipswich, Essex and Hamilton*, 54.

²New York Canal Commissioners, *Report*, Feb. 15, 1817, in *Public Documents Relating to New York Canals*, 1821, p. 204.

³Carey and Lea, *The Geography, History, and Statistics of America*, 103-104; Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 132-133; *American State Papers, Miscellaneous*, I, 827-828; Earle, *A Treatise on Rail Roads and Internal Communication*, 107; *American State Papers, Miscellaneous*, II, 142; New York Canal Commissioners, *Report*, 1817, in *Public Documents Relating to New York Canals*, 204. According to the statement in report on transportation in United States Census of 1880, the company was chartered June 22, 1793, the object being to connect the Merrimac above Pawtucket Falls with the Charles River and Boston Harbor. This was accomplished in part by the opening of the canal to Woburn in 1804, and wholly by its completion in 1808. The proprietors themselves, however, stated the original object to be more ambitious and did not announce the completion of the work until 1817 (see text). According to Carey and Lea, the canal descended southward from the summit level at Concord River to tidewater by means of 13 locks, with a total fall of 107 feet; and from the summit level northward to the level of the Merrimac by means of 3 locks, overcoming a fall of 21 feet. This gives a total lockage of 128 feet in all, effected by 16 locks. The length of the canal is given as 31 miles, the width as 24 feet, and depth as 4 feet. According to Macauley, the ascent from tidewater to the summit level at Concord River was 104 feet, and the descent from Concord River to the Merrimac was 32 feet, the whole lockage of 136 feet being overcome by 20 locks. The length of the canal is given as 27 miles, thus agreeing with most other statements as to the length. This discrepancy in length may be due to the inclusion or non-inclusion of feeders. According to the report of the New York canal commissioners in 1817, a branch-canal or side-cut owned by a separate company extended from the main canal to the Mystic River near Medford. Carey and Lea are probably correct in giving the date of commencement as 1793 as against 1790 by Macauley and the New York canal commissioners.

The income of the main canal, though increasing, was not sufficient by 1810 to cover operating expenses, repairs, and necessary improvements. Assistance was received from the State of Massachusetts by means of a grant of "two townships of eastern land." By funds derived from this land, the company was in 1810 constructing locks, dams, and canals at Merrimac, Dumbarton, and Bow. Other improvements were needed, especially between the New Hampshire lakes and the Merrimac River, in order to overcome a succession of falls amounting together to not less than 230 feet. An act had already passed the Senate of the United States, upon the petition of the proprietors, for the purchase of an interest in the enterprise by the General Government. Similar action was asked from the House of Representatives, but without result.¹

In Gallatin's report, 1808, the canal was said to run from Boston to the Merrimac at the head and near Pawtucket Falls, a distance of 22 miles, with a total fall of 107 feet and 19 locks, 3 of which, overcoming a fall of 28 feet, were located at the end of the canal, where the water emptied into the Merrimac. These 3 locks were 12 feet wide, 90 feet long, and were constructed of hewn stone. The remaining locks were 75 feet in length, and 6 of these were located at the falls near the middle distance, where there was a change of level of $57\frac{1}{2}$ feet within a mile's distance.² The boats employed on the canal were from 40 to 75 feet in length and 11 feet wide, the largest having a capacity of 24 tons, the shortest a capacity of 10 tons. These smaller boats were packets which passed from end to end of the canal every day. A raft a mile long and with a capacity of 800 tons had been drawn on the canal at the rate of more than a mile an hour by two oxen. The proprietors owned a mill near the union of the canal with Sudbury on the Concord River, where there was a fall.

The land purchased for the canal cost \$58,000, including various mill privileges, building lots, and farms. Cutting and forming the canal had cost not less than \$478,000. To recoup the proprietors and defray the expenses, it was estimated that the annual receipts must amount to \$36,000. The receipts were \$2,000 in 1802 and \$16,800 in 1806. The toll taken on the canal, apart from the hire of boats and horses, was 6 cents a ton per mile.³ According to the report of the New York canal commissioners in 1817,⁴ boats carrying 14 tons were drawn on

¹*Memorial of the Proprietors of the Middlesex Canal to the Senate and House of Representatives of the United States, asking aid, Dec. 7, 1810, in American State Papers, Miscellaneous, II, 142.* This report points to the year 1794 as the commencement of the enterprise.

²The width of the canal was given as 12 feet, evidently a misprint.

³*American State Papers, Miscellaneous, I, 827-828.*

⁴The canal commissioners of New York went in 1816 to make a personal inspection of the Middlesex Canal. They reported 3 feet as the depth of the canal and 20 as the number of locks in use. They also reported that the company was incorporated in 1789, that operations were begun in 1790, and that the canal was opened for use in 1804. See *Laws of the State of New York in relation to the Erie and Champlain Canals, I, 301-307.*

the Middlesex Canal by horses at the rate of 3 miles an hour. Heavier scow-shaped boats, 75 feet long and $9\frac{1}{2}$ feet wide, carrying 25 tons of wood, lumber, etc., were also in use. The expense of transporting a ton the whole length of the canal (27 miles) was \$3.50, of which \$1.70 represented toll and \$1.80 freight, and the principal articles transported were wood, timber, lumber of all kinds, pot and pearl ashes, rye, oats, provisions, and building stone. During 1816, 12,000 cords of wood were brought down the canal.

Lands within 6 miles of the canal on each side had increased one-third in price since the construction of the canal, while woodlands in New Hampshire, along the Merrimac River, had risen in value from \$2 to \$6, \$8, and \$10 per acre. By that time \$528,000 had been laid out in assessments upon the proprietors and \$50,000 more derived from tolls had been expended in building wharves and other improvements. Receipts were said to be rapidly increasing, the income in 1808 having been \$7,000; in 1809, \$9,000; in 1810, \$14,000; in 1811, \$17,000; in 1815, \$25,000; and the estimate for 1816 was over \$30,000.¹ In a report issued in April 1817, the board of directors of the canal announced the completion of the whole work and stated that when the existing debts were paid the income of the canal would be free from every other expense, except for ordinary repairs and for management, of which the latter account had never equaled \$8,000 a year. Attention was called to the property owned by the company apart from the canal, such as subsidiary canals, mills, real estate, land in the District of Maine, and rights of lottery worth from \$80,000 to \$120,000. The reported income from docks, tolls, rents, wharfage, storage, and dockage from 1812 to 1816 was as follows: 1812, \$12,600; 1813, \$16,800; 1814, \$25,700; 1815, \$29,200; 1816, \$32,600.

A statement made a year or two later by another authority asserted that the Middlesex Canal, though in operation for 8 or 9 years, had paid no interest on the capital of the proprietors, but that on the contrary the repairs and expenses of various kinds had not only swallowed up the whole income, but had actually run the company into debt upwards of \$17,000.²

Estimates of the cost of the canal vary greatly, according to the items included, the period when the statements were made, and the source of the statement. According to the memorial presented to Congress in 1810, the cost up to 1804 had been \$914,142.42, but this probably included some works not afterwards considered as belonging to the Middlesex Canal proper. Other estimates are: \$17,000 per mile,³

¹Compare these figures and estimates, however, with those below. There seems to be much dispute over the profitableness of the Middlesex Canal. Some claim it was of use and profit, others that it was a dead loss.

²Beach, *Considerations against continuing the Great Canal west of the Seneca*, by Peter Plough-Share, 23.

³*North American Review*, XIV, 241, Jan. 1822.

\$19,000 per mile,¹ and a statement about 1820 that the cost at 1804 had been over \$700,000.² According to another statement, the canal was entirely finished in 1808 at a cost of \$605,000, including \$30,000 expended on the Merrimac locks and canals.³ The cost of the canal was further stated in a communication on March 7, 1817, from the superintendent, John L. Sullivan, to the New York canal commissioners, as follows: The whole expense in assessments had been \$520,000, not including the application of income for several years previous in renovating and completing it, and the building of 5 wharves, etc., necessary to the business. The sum of \$50,000 was also to be deducted as having been applied to other works leading to the principal canal, thus leaving a total cost of construction of \$470,000, distributed as shown in table 25.⁴

TABLE 25.

Lands and extraordinary purchases and excavation of rock..	\$75,400
Bridges.....	11,600
Culverts.....	3,500
Aqueducts.....	33,000
Locks.....	54,000
Excavation.....	139,000
Embankments.....	120,000
	<hr/>
	448,000
Contingencies.....	22,000
	<hr/>
Total.....	470,000

The income of the Middlesex Canal of over \$32,000 in 1816 afforded a net income on the cost of about 3 per cent.⁵ Of all the early canals, the Middlesex and the Santee and Cooper Canals are said to have been the only ones that succeeded in accomplishing anything unassisted by the Government. We have just seen, however, that the former received aid from the State of Massachusetts.

The construction of the Middlesex Canal resulted in diverting much of the trade of New Hampshire to Boston. The middle section of Massachusetts favored the construction of a canal from Worcester to Providence in opposition to the Middlesex Canal. Boston opposed this further project for fear that her trade might be diverted to New York. Extensive flats, shoals, and reefs contracted the ship-channel into the harbor at Boston so as to render navigation difficult, and even precarious at times when the wind was unfavorable, though dams and sluices had been constructed by the close of the period to regulate the movement of the tide. The works of the Boston and Roxbury Mill

¹Earle, *A Treatise on Rail Roads and Internal Communication*, 107. Earle states further that the canal was begun in 1790, was 4 feet deep, had a lockage of 136 feet, and that it was "unprofitable."

²Carey and Lea, *Geography, History and Statistics of America*, 23, 103-104.

³U. S. Census 1880, IV, *Transportation*, 756.

⁴*Public Documents Relating to the New York Canals*, 226-229. See 226-227 for a detailed statement of the cost by sections. Table 25 is reproduced as printed in Public Documents with an unexplained error in the footing.

⁵*Ibid.*, 233.

Corporation were of this character and were said to surpass anything of the kind in the United States except the great canals of New York. The shipping of Boston amounted in 1815 to 143,420 tons and was exceeded by that of New York only. The harbor at Salem was said to have been so shallow about 1820 that vessels drawing more than 12 feet had to be loaded and unloaded at some distance from the wharves. Nevertheless, in 1816 Salem was the sixth city in the United States in amount of shipping, having a total tonnage of 34,454 tons.¹

The completion of the Erie Canal and the resultant strong impetus given to the further development of several systems of improved interior communication placed in jeopardy Boston's supremacy as a local center. With the Blackstone Canal bearing traffic out of Massachusetts to Providence, and the Connecticut River carrying it to Hartford, both of which places were commercially allied with New York, Boston, in 1825, had yet to solve the problem of counteracting the efforts of her neighbors to win away her trade.

While practical men of affairs were evolving plans and making estimates for a canal to Worcester and possibly on to the Connecticut, the more visionary were conceiving a continuous canal from Boston to the Hudson.² Influenced by these projects, the legislature passed a resolution, February 25, 1825, providing for a commission "to ascertain the practicability of making a canal from Boston to the Connecticut River and extending the same to some point on the Hudson River in the State of New York in the vicinity of the junction of the Erie Canal with that river. The commissioners' report, transmitted to the legislature on January 1, 1826,³ is based upon exploration of four routes to the summit range of the high land between Boston Harbor and the Connecticut River, of two routes thence to the Connecticut, of two from the Connecticut to the Hudson, and of several lateral feeders.

As regards the routes to the Connecticut River, the report stated that the northern one by way of North or Miller's River was preferable:

"It was to be presumed that when boats have passed down the Connecticut River over the various difficulties which exist from the mouth of Miller's River they will continue on to Hartford, the channel being clear and the distance short, rather than proceed to Boston; and consequently all the country above Miller's Creek, instead of looking to the latter city, as is ardently desired as a great market for sale and purchase, may gradually seek and ultimately find one in another direction which would render a canal that shall intersect the Connecticut River at Springfield of little consequence to Boston."⁴

In Engineer Loami Baldwin's report,⁵ the estimated expense of the canal from Boston to the Connecticut River is placed at \$3,000,000,

¹Kayser & Co. (publishers) *Commercial Directory*, 82.

²Adams, in Winsor (ed.), *Memorial History of Boston*, IV, 111 *et seq.*

³Massachusetts Canal Commissioners, *Report*, 1826, p. 5.

⁴*Ibid.*, 62.

⁵*Ibid.*, 63-115, inclusive.

while the cost of the canal to the Hudson from the Connecticut was placed at \$3,023,172.¹

The engineering difficulties, especially west of the Connecticut River, were apparently nearly insurmountable. In justification of the proposed canal, it was declared that the agriculturists of Massachusetts must be given better transportation facilities, if they were to compete successfully with those of other States which, though 300 miles more distant from their market, could, nevertheless, by navigation of natural or artificial waterways, move their products to market at an expense not greater than the marketing cost for Worcester County farmers.

The Massachusetts board based its expectation of large revenues upon the confident report of the New York canal commissioners in reference to the Erie Canal,² and believed that the tolls from the Boston-Hudson Canal would constitute a perpetual and annually increasing fund for internal improvements. These estimates of large returns from tolls embraced not only tolls which would be levied upon traffic gathered in from country adjacent to the canal, but also tolls upon traffic originating up the Connecticut River Valley for a distance of more than 100 miles, which, it was believed, would move through the canal.³ The statistics furnished to substantiate these claims are valuable chiefly as disclosing the growing needs for improved transportation facilities—ultimately provided by railroads. It was reported, after investigation, "that 14,600 wagons pass annually over one of these great routes [roads from Boston to Connecticut River] carrying an average of 1 ton each."⁴ In a letter published with the report,⁵ an account is given of the rising manufacturing interests that would be benefited. While there were saw and grist mills on the southern branch of the Nashua, and cloth mills and a nail factory at Lancaster, there were on a tributary one-half mile from Nashua two cotton factories having a capital of \$100,000. Three miles from these cotton mills, up the south branch of the Nashua, were the Pitts grist and saw mills and a spindle factory; 2 miles farther, Sawyer's cloth mills, 2 miles thence up the Nashua the West Bolton factory, with an actual capital of \$80,000; and 1 mile farther distant, the upper factory of West Bolton, with \$50,000 capital. A factory at Holden had a capital of \$150,000, while the Springfield factory then had a capitalization of \$600,000. It was stated that 6 of the foregoing establishments would eventually manufacture, on an average, 10 bales of cotton and wool a day, while

¹Massachusetts Canal Commissioners, *Report*, 1826, p. 148.

²*Ibid.*, 161. "New York Canal Commissioners' Report stated that the canal debt would be extinguished by 1836 by the canal fund and tolls and leave an annually increasing revenue of \$1,525,000."

³*Ibid.*, 162.

⁴*Ibid.*, App. 60. Report of S. V. S. Wilder, Bolton, Mass., Dec. 10, 1825, on number of wagons passing from Bolton to and from Boston, all coming or going to region of country on or near route from Bolton to Greenfield.

⁵*Ibid.*, App., letter No. 38, pp. 58-59.

the rest would furnish a yearly output of 18,000 bags of 5,000,400 pounds. The cost of land carriage to Boston of such an amount was \$200,000.

The commissioners found additional reasons for Boston's concern in internal improvements in the belief that several prospective New England improvements were about to be consummated. The engineer in the employ of the United States Government had reported that a canal could easily be constructed from near Barnet in Vermont, on the right bank of the Connecticut River, to Lake Memphremagog, and thence to the St. Lawrence. Several canal routes had been explored for connecting Lake Champlain with the Connecticut River, and such a spirit of enterprise was exhibited by the sections interested that it was expected that a canal would be constructed through the valley of the Onion (Winooski) or the Lamoille River and thence down the White or Wells River.¹ With a population in Vermont of 260,000, of which 150,000 represented increase since 1800; with more than 100 manufacturing companies incorporated; with agriculture advancing in every section of the State; and with sheep-raising becoming more extensive, the advantages to Boston in securing a portion of the trade of this section were considerable and were rapidly increasing.

The benefits wrought by the Champlain Canal also encouraged Massachusetts enthusiasts for internal improvements. Since the opening of the Champlain Canal, articles which had cost \$100 to transport before the war had been sent to and brought from Albany for \$5 a ton, while marble previously left unwrought in Vermont, because it would not bear the cost of transportation, had become a great staple of export. With the lessened cost of transportation, Vermont beef and pork, instead of being, as formerly, driven on hoof to a distant market, was, by 1826, being slaughtered and packed in the State, providing employment for many laborers.

There was a brisk demand in Boston for the copperas which had been manufactured for years in Strafford, none of which, however, could bear the transportation charge of \$15 to \$20 a ton to Boston.¹ Owing to the cost of transportation overland to Boston, pot and pearl ashes moved in large quantities from Vermont to Quebec¹ and Montreal, from which places they were exported to England, leaving in Canada for cartage, commissions, etc., earnings amounting yearly to \$122,800.

Reasons were found for expecting that much Erie Canal trade would go to Boston rather than New York, once the canal connection was made between Boston and Troy. The commissioners recognized the increasing dependence of Massachusetts upon the western section of New York for flour by stating that of 243,937 barrels of flour trans-

¹Massachusetts Canal Commissioners, *Report*, 1826, pp. 163-165.

ported into Boston alone in 1825, 36,499 barrels came from New York, the Genesee flour being greatly preferred.¹ The expense of transportation from Albany to Boston by coasters, including the cost of landing the cargoes from the canal-boats at Albany, storing, re-shipping, and insurance, was stated to be about the same as it would be on the canal from Troy. If the canal were opened, the extra price obtainable for produce at Boston and the lower cost of merchandise in Boston, as compared with Albany, as well as the impracticability of canal-boats proceeding to New York, would, it was thought, cause much of the trade to pass through the Massachusetts canal.²

Commissioners unfolded even greater possibilities for the commercial expansion of Massachusetts, conceiving that the Illinois and Michigan Canal might direct the lead trade to Massachusetts via the Erie. The canal fund was to be raised from a tax on the banks, duties on auction sales, proceeds from sale of public lands, State lottery, interest on the invested amount of claims for military services which was thought to be due from the National Government,³ and canal tolls.⁴

Governor Levi Lincoln was a pronounced advocate of internal improvements. In his message of June 2, 1825, he urged the legislature to take steps to secure better transportation facilities "of the articles of trade and consumption to the places respectively of demand and market." By so doing a greater number would be left to devote their time to agriculture, while the manufacturing and mechanic arts would be alike relieved by reducing the expense of obtaining the raw material for their fabrics and of the distribution of the products to distant markets.⁵ Commerce would, it was also asserted, be promoted by enabling more abundant supplies to be furnished for ship-building. Real estate in the vicinity of the canals would appreciate. The cost of all articles of foreign growth for commerce and consumption would be diminished and increased cultivation of the soil encouraged by increased demands for the agricultural products.⁶ For these reasons improved transportation should be furnished the manufacturing industries.

Governor Lincoln, in a speech delivered in June 1826, expressed his preference for canals over railroads. Railroads were mere passage-

¹Massachusetts Canal Commissioners, *Report*, 1826, p. 170. "During year ending November last, 34 vessels arrived at Boston from Albany laden with flour, grain, whisky, ale, butter, furs, leather, lard, wool, bacon, etc., and during same period 22 vessels sailed from Boston to Albany with fish, glassware, rum, molasses, tea, tobacco, sugar," etc.

²*Ibid.*, 171.

³*Ibid.*, 178, Claims unpaid equaled \$832,483.77.

⁴*Ibid.*, 175. Report signed Canal Commissioners: Nathan Willis of Pittsfield; Elihu Hoyt, Deerfield; H. A. S. Dearborn, Boston. See also Bliss, *Historical Memoir of the Western Railroad*, Introduction. The appendix contains many letters from men from different sections urging their favorite route, etc.

⁵Lincoln, *Message*, June 2, 1825, p. 6.

⁶Lincoln, *Speech before Legislature*, June 6, 1826, pp. 10-11.

ways for travel and transportation; they had some advantages over canals, but canals overbalanced these advantages by the greater convenience of passing on the canals and the superior adaptability of boats as compared with cars for accommodation of the infinite variety in weight and bulk of produce and products.

The appearance in Massachusetts of a railroad party in opposition to the canal faction induced Governor Lincoln to call attention to the fact that in urging the canal construction no exclusive character of improvement was intended. The advocates of the railroads, we are told, were then in the majority in the House, while the Senate was conservative.¹ The House, in consequence, ordered the appointment of a joint committee to consider the practicability and expediency of a railroad from Boston to the Hudson, but this failed to receive the Senate's concurrence. The House thereupon appointed a committee of its own.²

The impulse given to New York by the rapid development of traffic through the Erie Canal had drawn all the interests and connections of western Massachusetts thitherward and much of the Connecticut Valley trade was following. Boston seemed to be in an almost hopeless condition. The various schemes advanced during this period were all based upon the precedent of the Erie Canal. As that enterprise had been a government project, every suggested plan for improvement brought forward in Boston at this period rested upon the assumption of State aid. The Massachusetts legislature, however, still retained its traditional conservatism. While the State, in this period, was still as a whole agricultural and commercial, the representatives of the commercial towns were not numerous and were opposed by a much more numerous body of country gentry. This squirearchy stubbornly refused to permit the legislature to vote any assistance to the enterprises. Numerous reports and petitions were continually lost in the committee rooms.³ Finally, in March 1828, an act was passed creating a board of directors of internal improvements. Upon the immediate organization of the board another report was, in January 1829, laid before the legislature. This report with the accompanying surveys furnished the basis on which the locations of the early Boston railroads were subsequently made.⁴

¹Adams, in Winsor (ed.), *Memorial History of Boston*, IV, 119.

²*Ibid.* The committee consisted of Dr. Abner Phelps of Boston, Geo. W. Adams, son of President Adams, and Emory Washburn.

³*Ibid.*, IV, 121.

⁴See Bliss, *Historical Memoir of the Western Railroad*, 1-20, for history of the above-described early movements in Massachusetts; also *Niles' Register*, XXXII, 366, July 28, 1827, for letter of Governor Lincoln to Secretary of War Barbour; *Niles' Register*, XXXIV, 282, June 28, 1828, for Governor Lincoln on advantages of improved transportation; see Quincy, *A Municipal History of Boston, 1630 to 1830*, pp. 285-286, for the inauguration address of Mayor Harrison Gray Otis, Jan. 9, 1829, advocating a railroad to the Hudson.

RAILROADS IN MASSACHUSETTS.

Governor Lincoln, in his message to the legislature of January 7, 1829, presented the most urgent needs for railroad construction, because a "most serious reversion of trade was taking place to other markets."¹ "Already," he asserted, "hundreds of tons of merchandise have been carried from the warehouses of a neighboring government, through a new channel, into a central and populous district of the Commonwealth. In the very commencement of the use of the Blackstone Canal nearly 400 tons of freight were delivered at its head, while double that amount was discharged at different points on the route." "By the Blackstone Canal," he continued, "a direct trade in lumber has commenced with the State of Maine and in goods with the city of New York, from either of which places water conveyance 50 miles inland into Massachusetts is at least half the cost of land carriage from Boston to Worcester only."²

At about this time news was received, and published in the *Boston Advertiser*, of Stephenson's experiments with railroad locomotives in England. In November 1830 occurred the opening of the Manchester and Liverpool Railroad, and Hale, the moving spirit in Massachusetts in the railroad fight, gave all of the facts thereof in glowing terms in the same Boston paper. All of this added to the enthusiasm for the initiation of work in Massachusetts. But a decision which, by granting permission to build a parallel bridge, terminated the exclusive rights of the original Charlestown Bridge Company, made the stockholders, who then stood ready to build the railroad, unwilling to proceed until a franchise granting them exclusive railroad rights between the termini was obtained. Finally the legislature conceded such a franchise for a period of 40 years to the Boston and Lowell Railroad,³ and in June incorporated two more Boston roads, the Boston and Providence⁴ and the Boston and Worcester.

Contemporaneous with the above-described movements for eastern Massachusetts railroads, interest was being aroused in a western road which would connect Worcester and Boston with the Hudson. A general meeting of Boston citizens, as early as February 1829, adopted resolutions favoring such a road by a vote of over 3,000 to 60.⁵ In June 1829, a committee of the legislature reported favorably a bill authorizing the construction of a railroad to the western line of the State, with the provision that the Commonwealth was to subscribe one-third of the stock.⁶ The Western Railroad Company was there-

¹Lincoln, *Message to Legislature*, Jan. 7, 1829, p. 15.

²*Ibid.*, 16.

³Winsor (ed.), *Memorial History of Boston*. IV, 124-130. See also Crocker, *From the Stage Coach to the Railroad Train and the Street Car*, 7-12, inclusive, for a splendid array of pictures showing development of Massachusetts canals and railroads.

⁴See Boston and Providence Railroad, *Report of Directors*, 1832, for act of incorporation, surveys, and map of routes; also second and third annual reports.

⁵Quincy, *A Municipal History of Boston, 1630 to 1830*, p. 296.

⁶*Niles' Register*, XXXVI, 254, June 13, 1829.

fore chartered in March 1833, but no action was taken under the charter for two years, when the Boston and Worcester road was opened.¹ Then the people of Worcester, prospering by their town being one of the termini of the constructed road to Boston, feared the extension of the road westward. The engineering difficulties presented by the Berkshire Hills caused little confidence to be felt in the financial success of the scheme. But the railroad company's directors persisted in their effort to raise funds to have the railroad extended to Albany. After various failures, a house-to-house canvass raised the required amount of stock.² A bill was introduced creating the State Bank of Massachusetts, with a capital of \$10,000,000, and of this the bank directors were required to subscribe \$1,000,000 for shares of the Western Railroad stock. The anti-bank Democrats bitterly opposed this; but, seeing that the friends of the bank and of the railroad could pass the measure, in order not to be outdone, they proposed giving direct aid to the railroad. This was immediately accepted by the railroad advocates and a bill to that effect passed the House by a vote of 143 to 9. The bill having passed the Senate, it was signed by the governor on April 4, 1836, a few months prior to the financial crisis of 1837. The State gave the road additional aid in 1838 to 1839, and again in 1840.³

This State aid, however, was by no means beneficial to Boston in her endeavor to perfect her connections with the Hudson and the Erie Canal. It sustained the independent organization of the Western Railroad Company and prevented a reorganization under which the road might have become an extension of the Boston and Worcester, thus bringing the whole line under one ownership and management. "Palsied by the State aid, the Western road never got firmly established in the private enterprise and capital of Boston."⁴ The enterprise remained dormant for years, for the road did not connect with its natural New England terminus, Boston. The two companies, operating independently segments⁵ of what ought to have been one road, wasted their energy and resources during a period of more than 20 years in almost ceaseless bickering over the division of a joint business; and Boston, deprived so long of a united and continuous line connecting her with the West, was not able to compete successfully with New York, Philadelphia, and Baltimore, which were much sooner so favored by the Erie, the Pennsylvania canal and railroad system, and the Baltimore and Ohio Railroad, respectively.

¹Opening celebrated July 6, 1835.

²Adams, in Winsor (ed.), *Memorial History of Boston*, IV, 131-132.

³Winsor (ed.), *Memorial History of Boston*, IV, 133-135. As evidence that Boston was in 1835 thoroughly awake to the importance of securing western and southern trade, see *Niles' Register*, XLIX, 109, Oct. 17, 1835; see also, speech of Emory Washburn of Worcester, Massachusetts, in House of Representatives, Massachusetts, Feb. 14, 1838, on bill to aid the construction of the Western Railroad.

⁴Winsor (ed.), *Memorial History of Boston*, IV, 134.

⁵The Boston and Worcester and the Western Railroads.

THE CAPE COD CANAL.

Cape Cod is a narrow arm of land extending from the southeastern portion of Massachusetts 35 miles to the eastward and then by a sudden turn to the northward for an equal distance. This neck of land increases the distance of water transportation between Boston and the ports to the west and the south between 70 and 130 miles. Of even greater significance is the risk to lives and property which the rounding of the cape entails. Parsons, in his *Cape Cod Canal*, states:

"On the south side lie Martha's Vineyard and Nantucket Islands, inclosing Vineyard and Nantucket Sounds, with their high tidal currents and many shoals; while to the east are the great shoals extending southeasterly to the celebrated Nantucket Shoals, marked by the light vessel of that name. These shoals, the low, sandy coast, difficult to see in thick weather, frequent fogs, and the unbroken exposure to northeast storms, have made the passage of the cape a dreaded one to all mariners."¹

The width of the neck of land does not exceed 10 miles, save at the southern projection towards Falmouth. In fact, the junction of the cape to the mainland is less than 8 miles in width, with an elevation of less than 30 feet above sea-level.

It is not often that the very region which presents the least obstacles towards the construction of an artificial waterway represents the position of a canal which the demands of trade would select. So obvious were the advantages of this route that the early settlers of Plymouth established a trading-post on Manomet River, from which point they engaged in a brisk water trade with the Dutch settlers of New Amsterdam. The extension of this river for 2 miles to the north, so as to form a complete water connection, is noted in Samuel Sewell's diary (October 26, 1676), as follows:

"Mr. Smith, of Sandwich, rode with me and showed me the place which some had thought to cut, for to make a passage from the south sea to the north."²

Some 20 years later (1697), the General Court of Massachusetts adopted the following resolution:

"Whereas, it is thought by many to be very necessary for the preservation of man and estates, and very profitable and useful to the public, if a passage be cut through the land at Sandwich from Barnstable Bay, so called, into Monament Bay, for vessels to pass to and from the western part of this country.

"Ordered, That Mr. Hohn [*sic*] Otis, of Barnstable, Captain William Bassett and Mr. Thomas Smith, of Sandwich, be and are hereby appointed to view the place and make report to this Court, at their next sessions, what they judge will be the General Conveniences and inconveniences that may accrue thereby, and what the charge of the same may be, and the probability of effecting thereof."³

¹Parsons, "Cape Cod Canal," in *Annals of the American Academy of Political and Social Science*, XXXI, 81, Jan. 1908.

²Diary of Samuel Sewall, Oct. 26, 1676, quoted in Parsons, "Cape Cod Canal," in *Annals of American Academy of Political and Social Science*, XXXI, 81-91, Jan. 1908, 82.

³*Ibid.*, 83.

No mention of the report of the committee is made in the records and no further action was taken by the General Court of Massachusetts until 1776, when the following resolutions were passed by the General Court in council:

"Whereas, it is represented to this Court that a navigable canal may without much difficulty be cut through the isthmus which separates Buzzards Bay and Barnstable Bay, whereby the Hazardous Navigation round Cape Cod, both on account of the shoals and enemy, may be prevented, and a safe communication between this colony and the southern colonies be so far secured.

"*Resolved*, That James Bowdoin and William Sever, Esqrs., with such as the Hon. House shall join, or the major part of them, be a committee to repair to the town of Sandwich, and view the premises, and report whether the cutting of a canal as aforesaid be practicable or not. And they are hereby authorized to employ any necessary surveyors and assistants for that purpose."¹

The committee appointed Thomas Machin as its engineer and proceeded to survey the ground, but he had scarcely begun his work when his services were commanded by Washington as one of the army engineers. As a result, the survey was postponed until 1824, when the Federal Government authorized surveys, plans, and estimates to be made at national expense. An exhaustive and elaborate report, including drawings for the construction of a canal 60 feet wide at the surface and 36 feet at the bottom, with a depth of 8 feet, was made by the Government engineers.² These plans, which were favorably commented upon by foreign engineers at the time, did not result in any action except the formation of a company to carry out the recommendations. National interests, which culminated in the Civil War, interfered, and as a result the canal received no further attention until in the seventies.

¹Quoted in Parsons, "Cape Cod Canal," 83.

²*Senate Ex. Doc. No. 104, 47th Cong., 1st sess.*

CHAPTER VI.

CANALS AND WATER ROUTES IN NEW YORK.

Physiography, 161. Political background of the Erie Canal, 162. Economic background of the Erie Canal, 165. The Hudson-Mohawk River scheme, 170. The Erie Canal, 180. The Champlain Canal, 195. Oswego, and the Seneca and Cayuga Canals, 197. Black River Canal, 199. The Chemung Canal, 200. The Chenango and Genesee Valley Canals, 202. The Delaware and Hudson Canal, 203.

PHYSIOGRAPHY.

The character and location of the natural waterways in New York differ so markedly from those of any other State in the Union that they deserve special and detailed treatment. Even the routes possible from the lakes to the ocean via the Mississippi and the St. Lawrence must come second, because the ports to which they lead are not available for all products all the year round. It was very early recognized that New Orleans could not be a grain-shipping port on account of its climate, and the winter closure of Montreal and Quebec cut in half their possibilities. Pennsylvania, by means of its two chief rivers, the Delaware and the Susquehanna, had a means of access, but neither was comparable in navigability with the Hudson, which at its "fall-line" touches directly the greatest break between the Atlantic coast and the prairies, and by a short portage the direct water-route to Canada. From the Mohawk, by short portages also, the whole rich country of western New York, in the lake and Genesee valleys, was opened.

Probably the earliest idea was to tap the Great Lakes by a canal from Rome, at the head of navigation on the Mohawk, to Oswego on Lake Ontario, via Wood Creek, Oneida Lake, and the Oswego River. A well-worn Indian trail lay along this route, used by soldiers and traders from the beginning of exploration and settlement.¹ The difficulties in making the rivers fit for navigation by boats of larger draft than canoes, together with the added advantages of a canal that could receive the lake trade above the falls at Niagara, soon necessitated a change of the major part of the plan, though the earlier features of canals to Oswego on the north and to Cayuga and Seneca Lakes on the south were retained as subsidiary. The contour of the land made it the point of strategic importance as the gateway of the West, and especially of the Northwest, for purposes of commerce. The point at the junction of the Monongahela and Allegheny Rivers was of immense importance for immigration, but for purposes of trade was, as has been seen, practically impossible until the advent of the railroad. Inevitably, therefore, with the very beginning of settlement beyond the line of the Appalachians, New York began to look towards a canal.

¹ Semple, *American History and its Geographic Conditions*, 41.

POLITICAL BACKGROUND OF THE ERIE CANAL.

The fact that the Middlesex Canal had not become remunerative indicates the smallness of its tributary New England trade. Boston was slowly learning that it must reach out and secure commercial connections with the West. With the changing economic conditions went a change in the political complexion of the section. The breaking-down of the old New England conservatism was marked by the fall of the Federalists in 1820 and the inauguration of the Republicans in control of the State.¹

The Middle States were also increasing their manufacturing interests. In the textiles they were in 1820 a close second to New England. At the same time the Middle States had one-half the total capital invested in pig-iron in the United States and nearly 40 per cent of that invested in raw iron.²

The Middle States, blessed with the three great importing and exporting centers, New York, Philadelphia, and Baltimore, became more and more interested in perfecting every possible means of transportation to the different ports of the country as their manufacturing interests increased.

New York increased in population during the decade 1820 to 1830 by over one-half million more than the total increase of all New England for the same period.³ This growth, as in the previous period, was largely in the western part of the State.⁴ In consequence, the counties bordering on Lakes Ontario and Erie and the remaining ones west of Oneida were becoming of greater commercial and political importance. In fact, the control of the State was gradually passing to these newer sections. How to get the output of western New York to a market had to be determined. Public and private interest demanded the early completion of the Erie Canal.

The difficulties which delayed the commencement of the construction of the Erie Canal until 1818 were in part those which prevented the furtherance of all improvements in New York and the other States. These were: (1) scarcity of engineers, the engineering profession being then unknown in America; (2) excavating machinery had not been invented; (3) there were no contractors in America; (4) the route was through unbroken forest or miasmatic marshes; (5) sectional prejudices were disclosed in the fear that eastern New York had for the competition of the western part of the State.⁵

However, on April 7, 1819, the law was passed authorizing the construction of the canal from the ends of the middle section westward to

¹Cf. Turner, *Rise of the New West, 1819-1829*, pp. 16-20; Schouler, *History of the United States*, II, 282, 511; III, 52; Adams, *History of the United States*, IX, 133.

²Cf. Bishop, *History of American Manufactures*, II, 347; Swank, *Iron in All Ages*, 377, 520.

³U. S. Census 1870, I, 3.

⁴In the decade 1820-1830, New York, west of the Oneida Lake, increased in population by a percentage more than twice that of the eastern half of the State.

⁵Whitford, *History of the Canal System of the State of New York*, I, 49.

Lake Erie and eastward to the Hudson and from the main canal to the State Salt Works at Salina. The Holland Land Company contributed 100,632 acres of land in Cattaraugus County to the Erie Canal funds.

The opponents of the western section of the canal planned to prevent the building of that section by completing the eastern section first and so adding to their numbers the large population of the East whose local needs would be satisfied.¹ Accordingly an effort was made to secure the delay in the construction of the western section until both the northern canal to Lake Champlain and the eastern canal from Utica to the Hudson were completed. But Clinton, by a speech before the assembly, secured the defeat of the scheme.²

When in 1822 a location for the western terminus of the canal was sought, a lively contest arose between Black Rock and Buffalo for the honor. The claims of Black Rock were championed by Peter B. Porter, the Congressman who made so telling a speech in Congress in 1810 in advocacy of the Erie Canal and who continued a political power in western New York. The decision in favor of Buffalo resulted in the collapse of Black Rock and its pier, constructed in anticipation of victory.³

The southern-tier counties and the Delaware River counties were opposed to the Erie Canal.⁴ DeWitt Clinton, to win their support in the State legislature, promised that he would obtain the cooperation of the canal counties to construct a road through the Delaware and lower-tier counties to the West at the expense or with the substantial aid of the State. In 1824 Clinton secured the enactment of a provision for the survey of such a road from the Hudson to Lake Erie. With this survey, we are told, "there began that persistent policy of chicanery and duplicity with which politics, selfishness, and ingratitude made fruitless for many years the efforts of the Delaware, Susquehanna, and Allegheny Valleys to escape from the bond of commercial isolation."⁴ The Erie Canal party in the legislature caused the survey to avoid the valleys most concerned in securing the road and to pass through high, unbroken, and uncultivated lands. This made the route entirely unsatisfactory to the parties to whom the road was pledged. In spite of their opposition, the survey was accepted by the legislature, and the sectional quarrels over the favoritism shown the Erie Canal counties were continued.

The Lake Ontario interests asserted themselves in their turn. Several petitions were sent to the legislature during the session of

¹Whitford, *History of the Canal System of the State of New York*, I, 93-94.

²New York, *Assembly Journal*, 1820, p. 516; Whitford, *History of the Canal System of the State of New York*, I, 95.

³Whitford, *History of the Canal System of the State of New York*, I, 109-111.

⁴Mott, *Story of Erie*, 2; Renwick, *Life of DeWitt Clinton*, 227, 293.

1819, praying for the improvement of Oswego River so as to connect the waters of Lake Ontario with those of the Erie Canal. These were favored by the committee in the assembly¹ and appropriations were made in 1820 for the improvement of the river.

The economic advantages of the canal were shown in the reasons expressed for its construction. They were: (1) the State owned over 7,000 acres of land in its vicinity, the value of which would be increased; (2) it would furnish the shortest and cheapest route by which the Erie Canal could be connected with Lake Ontario; (3) the cost of manufacturing salt, a State industry, would be cheapened, as very extensive timber tracts would be opened and the salt works then required 30,000 cords of wood a year; (4) more salt would be manufactured and thus increased revenue would be secured the State; (5) a navigable connection between the Erie Canal and over 500 miles of coast fairly well settled along Lake Ontario and the St. Lawrence would be secured; (6) St. Lawrence and Jefferson Counties would gain access to markets then debarred them by the unfriendly regulations of the Canadian Government. The people of Monroe County, with the city of Rochester, opposed the Oswego Canal, as they wished the connection between the Erie Canal and Lake Ontario to be made in the Genesee Valley.²

The Genesee River meets the Erie Canal at Rochester and is separated from the Allegheny River at Olean by a very narrow divide. By constructing a canal across this divide and by the canalization of two rivers an unbroken communication with the different sections of New York would not only be secured for the fertile Genesee Valley, but connections would be made with the Ohio and Mississippi also. Consequently Genesee, Allegany, and Cattaraugus Counties petitioned the legislature in 1823 for this Genesee Valley Canal, and the governor advocated it in his message of 1825. Still nothing was done upon this canal until 1836.³

Although such improvements had been made by 1818 that boats passed from Lake Cayuga to Seneca Lake, so crude was navigation that petitions were sent the legislature in 1824,⁴ asking for a well-built canal, but the contract for the work was not let until 1826. A determined effort was made to prevent any State funds being diverted from the Erie and Champlain Canals.

Nevertheless, strong interest continued to be displayed in other canals before 1825, the date of the completion of the Erie. As early as 1779 General Sullivan proposed the construction of the Chemung Canal to connect the Chemung River at Elmira with Lake Seneca.

¹New York, *Assembly Journal*, 1819, p. 632; Whitford, *History of the Canal System of the State of New York*, I, 446-447.

²Whitford, *History of the Canal System of the State of New York*, I, 449-450.

³*Ibid.*, 474.

⁴*Ibid.*; also Williams, *The New York Annual Register for 1830*, p. 116 et seq.

By 1812 the route had been explored by Geddes and favorably reported upon. In 1815 the Seneca and Susquehanna Lock Navigation Company was incorporated. From 1819 to 1825 annual bills favored by Clinton were introduced, providing for State construction of the Chemung Canal, but it was impossible to pass them through more than one branch of the State legislature. With the completion of this canal it was claimed that the State salt market would be extended to the Susquehanna and its tributaries on into Maryland to the amount of 450,000 bushels annually, whereas the expensive transportation then prevented such extension. This would give to the State an increased revenue of over \$56,250 over and above the tolls, while with the execution of the projected Pennsylvania and Maryland improvements much further extension of the salt trade could be secured. At the same time, better facilities would be given for the shipment of western New York plaster to the Susquehanna, and the coal from the extensive mines in the vicinity of the navigable waters of the Tioga River could then furnish a cheap fuel to the manufacturing cities.¹

As early as 1814 it was proposed that the State legislature should authorize the building of the Chenango Canal, which, completed in 1836, extended from Utica on the Erie to the Susquehanna River at Binghamton, Broome County, New York.² Later it will be shown how sectionalism played its part in finally securing the construction of this canal.

ECONOMIC BACKGROUND OF THE ERIE CANAL.

The eastern section of New York nearly always sent its products down the Hudson to New York. The most easterly portion, physiographically connected with the Connecticut Valley, became more or less interested in the contemplated improvements of the Connecticut River. The bulk of the population of the northern section of the State being mainly located along the shores of Lake Ontario, the St. Lawrence, and Lake Champlain, traded much with Montreal. The southern section of the State offered encouragement to Montreal, New York, Baltimore, Philadelphia, and Pittsburgh to attempt to secure trade with portions of the territory.

Before 1807 the possibilities of inland navigation in New York were described.³ The counties bordering upon Lake Champlain sent their products to Montreal. It was early suggested that the Champlain Canal be completed, so that the products from this district might

¹New York, *Assembly Journal*, 1824, p. 743; Whitford, *History of the Canal System of the State of New York*, I, 610; O'Reilly, *Settlement in the West*, 236; Williams, *The New York Annual Register for 1830*, p. 116; Hazard, *United States Commercial and Statistical Register*, II, 73, Jan. 1840; 412, June 1840.

²O'Reilly, *Settlement in the West*, 237; Whitford, *History of the Canal System of the State of New York*, I, 672-673.

³Cooper, *Guide to the Wilderness*, 18-19.

be sent down the Hudson.¹ The Oswegatchie, navigable for 70 miles, led the traffic of St. Lawrence County to Montreal. The Genesee country, being favorably situated on Lake Ontario, had a choice of routes to New York or Montreal. The products of Ontario could be brought to market at New York by means of Seneca Lake and the Mohawk River as far as Schenectady, 14 miles from the Hudson, where a portage was resorted to in order to pass around Cohoes Falls. By the river connections with the lakes, central New York could send its products to the Mohawk. The Susquehanna and its branches, connecting with the Tioga, Chenango, and other rivers of New York, led much of the produce of the southern section of the State to Philadelphia and Baltimore. The southwestern part of the State, upon the improvement of the upper waters of the Allegheny River and the perfection of a navigable connection between it and Lake Erie, would be able to ship more produce to Pittsburgh. Pointing out the most advantageous situation for trade, Cooper wrote that the trade of the vast western country "must be divided between Montreal and New York and the half of it be lost to the United States unless inland navigation be formed from Lake Erie to the Hudson."²

Before the close of the eighteenth century the movement had been inaugurated for the improvement of the Hudson, Mohawk, and other rivers and the canalization of the streams at certain points.³ The extremely bad condition of the navigable streams encouraged this.⁴ But clearly the last part of the eighteenth century and the first decade and a half of the next were occupied very properly in New York State in road-making. Until the principal turnpikes were built,⁵ which

¹The Northern Inland Lock Navigation Company was incorporated in 1792, but little work was done, owing to insufficient funds and errors of promoters. See *American State Papers, Miscellaneous*, I, 765 *et seq.*; Hosack, *Memoir of DeWitt Clinton*, 380; Renwick, *Life of DeWitt Clinton*, 151. The company expended about \$100,000 at a total loss, *Report of Board of Engineers on Deep Waterways*, House Doc. No. 149, 56th Cong., 2d sess., 1900-1901, LXXI, pt. i, 30.

²Cooper, *Guide to the Wilderness*, 13-18.

³The earliest legislation in reference to the improvement of the Mohawk was in 1784, other attempts resulting in 1808 in the proposal by Judge Forman of a concurrent resolution directing a survey to be made of "the most eligible and direct route for a canal from the Hudson River to Lake Erie." This was passed and the survey made, yet nothing was done. In 1807 appeared Jesse Hawley's ("Hercules") articles, advocating a canal, in the *Genesee Messenger*. Application was made in 1809 by the Western Inland Lock Navigation Company to the legislature for the exploration of a route for a canal from Oneida Lake to the Seneca River, the execution of which was to be left to the company. Instead State commissioners were appointed to explore the whole route from the Hudson to Lake Ontario and Lake Erie. A report was made in 1812, in which the inclined-plane idea was abandoned and a plan adopted identical in general features with one actually executed. In 1812 the State Board of Commissioners were authorized to purchase the interests of the Western Inland Lock Navigation Company and to borrow one-half million dollars as a fund for a canal. The second report of the commission appeared in 1814. A memoir of DeWitt Clinton was drawn and circulated in 1815. Much interest was shown in the State. The act was passed April 17, 1816. See Renwick, *Life of DeWitt Clinton*; *Public Documents Relating to New York Canals*; Hulbert, *Historic Highways*, XIV, chaps. ii, iii, iv, v, vi.

⁴See *American State Papers, Miscellaneous*, I, 772 *et seq.*, for an account of poor transportation facilities; also Journal of DeWitt Clinton of 1810, in Campbell, *Life and Writings of DeWitt Clinton*, 27-204.

⁵See, for account of road-making, Hough, *History of Jefferson County in the State of New York*, chap. v; Journal of DeWitt Clinton of 1810, in Campbell, *Life and Writings of DeWitt Clinton*, 27-204; Hulbert, *Historic Highways*, XI, 98-99.

reached out in every direction, and enabled all the surplus products of every section to be collected at local centers, the freight to be transported on the main trunk-lines of the projected canal systems was not of sufficient amount and value to warrant the State's undertaking the proposed improvements. By about 1810 such progress had been made in road-making that not only were the sections of the State that had been longest settled well supplied, but western New York also. The commerce of this new section appeared then to be moving in every direction in accordance with natural facilities of transportation. With this system of roads well developed, the flow of commerce began to have sufficient volume to foreshadow the practicability of the construction of the contemplated canal system. The fact that merchandise was then more easily moved westward from New York City and Albany than from Philadelphia and Baltimore¹ led the merchant princes of the metropolis to seek to clinch their supremacy over their commercial rivals in the race for new trade with the West.

From the first it was confidently expected that the Erie Canal would attract the trade of Ohio and the Great Lakes to New York. All the towns on the waters of the Big Beaver, Muskingum, Scioto, and Miami-of-the-Ohio got their supplies from Philadelphia and Baltimore at an expense of \$8.50 per 100 pounds. It was estimated that the transportation charges from New York would be only \$6.50. The center of the State was 50 miles nearer Lake Erie than Wheeling and much better roads could be built to Lake Erie than to the Ohio.²

Much of the internal trade of New York State, it was believed, would reach the Hudson and the Atlantic via the canal. A heavy transportation of timber from the forests about Cayuga Lake would result, while the salt and gypsum of Onondaga County would find an easier means of exit.³ By sending to New York City by the new route the staves which had thus far been going to Quebec the cheapened cost of transportation would leave much greater net profit to the shippers in western New York.⁴ The farmers shipping wheat to the Hudson were taxed \$3,000,000 a year for transportation, and to many the rate was prohibitive.⁵ With the canal built, the mean distance of each farm from the Hudson would be only 23 miles and the transportation rate correspondingly reduced.

The farmers on the lands along the Susquehanna north from Wilkes-Barre, Pennsylvania, had already raised their soil 25 per cent in value

¹See Journal of DeWitt Clinton, in Campbell, *Life and Writings of DeWitt Clinton*, 27-204.

²"Communication to Simeon DeWitt, Commissioner of Canals of New York, from Edward Paine et al.," dated Geauga County, Ohio, Aug. 1810, 9-10 (bound in a pamphlet entitled *Remarks on the Importance of the Contemplated Canal between Lake Erie and the Hudson*, in Newberry Library, Chicago).

³*A Serious Appeal to the Wisdom of the Legislature of New York on the Subject of a Canal*, by a Friend of his Country, 10.

⁴Clinton, *Remarks on the Proposed Canal*, by Atticus, 31.

⁵*Ibid.*, 4. "Much wheat," it was stated, "had to be transported by road 150 miles to the Hudson, at a cost of 67 cents a bushel, and a wagon and four horses could carry only 50 bushels."

by the use of ground gypsum as a fertilizer.¹ When the various projects for the improvement of the inland waterway transportation of New York and Pennsylvania were perfected a much more general distribution of this fertilizer would result from its cheapened cost.

With western New York building up with great rapidity, a new wheat-raising section was becoming more and more insistent in its demands for improved transportation, so that the surplus wheat and flour of the district could profitably be shipped to New York. This could not be done before the completion of the Erie Canal, as is evidenced by the report of March 17, 1817, to the State legislature, in which it was shown that the expense of transportation from Buffalo to New York was \$100 per ton, nearly three times the market value of wheat in New York, six times the value of oats, and far exceeding the value of cured provisions.² A larger number enlisted themselves among the ranks of the advocates of the canal when it was shown how great the advantages were which the new route would give New York over its competitors for the trade of the Great Lakes and the Ohio Valley.

With New Orleans shown to be clearly outclassed by Montreal, concrete illustrations were given to prove that New York would have, upon the completion of the canal, marked advantages over Montreal. It was claimed that the freight on a barrel of flour delivered at Montreal, costing \$1.50, would be at New York, via the canal, only 55 cents. A ton of sugar delivered at Buffalo from Montreal cost \$25, while by the canal it would cost only \$5.50 from New York. A more certain delivery would be secured via New York, as the Hudson was navigable 9 months during the year.³

When the selection of the route was under discussion sectional differences arose as to the route from the Seneca westward. The people of Jefferson and Oswego Counties, who had been thus far compelled to trade with Montreal, desired to have the canal built from Syracuse to Oswego via the Oswego River.⁴ This would secure to them the advantages of trade due to the growth of Oswego by the adoption of the Lake Ontario route. By stopping the western course of the canal at the Seneca, the traffic of the Great Lakes and the Ohio Valley would go to Oswego via Lake Ontario. This northeastern section of the State tributary to Lake Ontario was older than the

¹The plaster of paris reached Wilkes-Barre from Ithaca via Owego and the Susquehanna.

²Andrews, *Report on the Trade and Commerce of the British North American Colonies*, 278; cf. *Niles' Register*, XV, 267, Dec. 12, 1818; *Hunt's Merchants' Magazine*, XXIII, 384, Oct. 1850, verifies Andrews and gives other items.

³*A Serious Appeal to the Wisdom of the Legislature of New York on the Subject of a Canal*, by a Friend of his Country, 11. In *Hunt's Merchants' Magazine*, XXIII, 387, Oct. 1850, it is stated that "cost of transportation from Buffalo to Montreal was \$30 per ton and the returning transportation from \$60 to \$75." From New York to Buffalo, in 1817, the cost was about \$100 a ton. It was estimated that the canal would reduce cost from New York to Buffalo from \$10 to \$12 a ton. The writer states that in the years 1830 to 1850 the cost had averaged \$7.78.

⁴Beach, Samuel B., *Considerations against Continuing the Great Canal west of the Seneca*, by Peter Plough Share, 6-9.

western section and, having earlier perfected its roads, it had for some time been interested in improved water connection between Oswego and the Mohawk via Oneida Lake. The Western Inland Lock Navigation Company had been incorporated in 1792 to connect by a canal the Mohawk River with Lake Ontario.¹ It had done considerable work from Little Falls on the Mohawk westward to Oneida Lake, and extended the improvements by 1813 so that boats went to within 12 miles of Oswego. They had expended over \$400,000 and induced the State to purchase stock, when insufficient funds and bad management caused suspension of operations. It was natural for many to insist first upon the completion of the work to Lake Ontario. Certainly those interested did not hesitate to demand that the State should also authorize the completion of the Oswego Canal before their assent would be given to the enactment of the law empowering the commissioners to begin work on the western section of the Erie.²

The friends of the Oswego line of communication claimed that produce could be sent to market at New York during the 3 months in which at Montreal it lay dead on the hands of the owners waiting for the opening of the St. Lawrence. The wheat and flour from the lake country, via Montreal, could not reach the market in Spain or Portugal until after the appearance of the wheat from Dantzic. From New York the Ontario wheat could reach southern Europe ahead of that from the Baltic, and before the local harvest there. Montreal was more easily overstocked than New York. Trade with Montreal was liable to ruinous fluctuations, owing to variations in England's colonial policy. At times there was a direct prohibition of American products. The ad valorem duty demanded by the United States so enhanced the cost of goods purchased at Montreal as to make it necessary to purchase supplies from New York even while exporting from Montreal, and it was therefore awkward and expensive to sell produce in Montreal and transmit the proceeds to New York to purchase goods in exchange.³

But the counties west of Seneca Lake were exhibiting greater growth in population and importance, both commercially and politically, than those bordering on the eastern shore of Lake Ontario. This district looked naturally to the strengthening of its local markets by the continuance of the canal westward to Buffalo. The interest which finally predominated considered also that it was of more immediate importance to secure to New York all the trade of the Great Lakes and the Ohio than to consider simply the narrower interest of the eastern

¹*Hunt's Merchants' Magazine*, XXI, 53, July 1849; cf. also *American State Papers, Miscellaneous*, I, 765 *et seq.*, for historical account of the company; Renwick, *Life of DeWitt Clinton*, 145 *et seq.*

²The very exorbitant charge of \$5.75 per ton, made in 1818, by the Western Inland Lock Navigation Company for a passage of 15 miles, encouraged new works. *Hunt's Merchants' Magazine*, XXIII, 264, Sept. 1850.

³Beach, Samuel B., *Considerations against Continuing the Great Canal West of the Seneca*, by Peter Plough Share, 11-12.

shore of Lake Ontario. It was also asserted that time would be saved by the Erie Canal, as it required only three reloadings, while the Lake Ontario route required five.¹

THE HUDSON-MOHAWK RIVER SCHEME.

The period previous to 1820 in the history of internal improvements in the State of New York is chiefly concerned with (1) the "turnpike era" and (2) the origin and initiation of the Erie and Champlain Canals. All other issues were decidedly subsidiary and comparatively unimportant. By the time of the commencement of the Erie and Champlain Canals it had been found that turnpikes, while resulting in great benefits to the State in the development of better roads, were nevertheless inadequate to preserve either the domestic commerce or to draw a fair share of the western commerce to the markets of the State. Almost contemporaneous with, or a little previous to, the turnpike movement, occurred the attempts to improve the Hudson-Mohawk-Lake Ontario route of water communication by means of local works on a relatively small scale. A description of these improvements and of the realization of their inadequacy² form, in addition to the treatment of the turnpike system above, the natural introduction to the second phase of internal improvements in New York previous to 1820.

The Hudson-Mohawk route by water as by land had long formed a way of approach to the western country, and suggestions were made at an early period for the improvement of both land and water routes. Cadwallader Colden, surveyor-general of the Province of New York, made a report in 1724 to the colonial governor describing the water-courses from Albany to Montreal and to Lake Ontario.³ Though this report attracted considerable attention at a later date, it led to no immediate suggestions for the improvement of these routes. The first reference to interior waterway improvements in New York is found in the recommendations of Sir Henry Moore, colonial governor, to the assembly on December 16, 1768, for the improvement of the Mohawk River at the Falls of Canajoharie.⁴ That such improvements had been made in a small way even before that date appears from a statement made by Carver, after his travels in the western country in 1766, that a junction had been effected between the waters of the

¹(a) Reloadings via Erie route: (1) from large lake-boats to canal-boats; (2) from canal-boats to Hudson River boats at Albany; (3) from Hudson River boats to ocean vessels at New York. (b) Reloadings via Ontario route: (1) from lake-boats to canal-boats, around Niagara; (2) from canal to Lake Ontario boats; (3) from Lake Ontario boats to river-boats at Oswego; (4) at Albany for Hudson River; (5) at New York for ocean.

²Hosack, *Memoir of DeWitt Clinton*, letter from Jonas Platt to Hosack, 380-388; also Poor, *History of the Railroads and Canals of the United States*, I, 357.

³Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 11; report contained in Hosack, *Memoir of DeWitt Clinton*, 233-239.

⁴*Report of Board of Engineers on Deep Waterways*, in *House Doc. No. 149*, 56th Cong., 2d sess., 1900-1901, LXXI, pt. i, 30; also *Hunt's Merchants' Magazine*, XXIII, 261, Sept. 1850.

Wood Creek and those of Mohawk River by means of sluices at Fort Stanwix.¹ During the French and Indian War this route was the thoroughfare to the military posts on Lake Ontario.²

There is much other evidence to show how often in men's minds was the project of water communication in New York. Christopher Colles, "the first projector of inland navigation in America," gave a series of lectures in 1773 on the improvement of waterways at the Exchange in New York City. Governor Tryon, in his report for 1774, recommended a system of locks and canals on the Mohawk and Hudson Rivers.³ The Revolution necessarily put a stop to all practical considerations of the question, although the campaigns made the need yet more apparent.⁴ It was during the war, indeed, that the first idea of a canal independent of the rivers was suggested by Gouverneur Morris, when he predicted that "the waters of the great inland seas would, by the aid of man, break through their barriers and mingle with those of the Hudson." At the close of the war the interest became again active, from a variety of motives. Jefferson feared it might become a competitor of the Potomac route. In 1784, after Washington had made a tour along the northern and western waterways of New York, though having much the same thought in mind, with his wonderful foresight he nevertheless strongly favored the improvement of these routes, because the more ways there were for commerce between East and West the more closely the two sections would be knit together.⁵

The same year Christopher Colles attempted to induce the New York legislature to take up his schemes, but was refused on the ground of inexpediency. The same report, however, favored a private corporation for the purpose.⁶ Colles tried again in 1785, and was voted \$125 for the purposes of a survey and plan of the proposed work. Colles made his plans as far as Wood Creek, near the present site of Rome, and published the results in a small pamphlet, describing his journey and pointing out the advantages, both military and commercial, to be derived.⁷ A bill was accordingly introduced in the legislature in 1786, but it never became a law, and Colles does not seem to have been longer active in the matter. It is worth noticing that the western terminus of this canal was to have been at Oswego. Another, with an extension to Lake Erie, promoted by Jeffrey Smith, met the same fate. Elkanah Watson next took up the idea, deter-

¹Carver, *Travels through the Interior Parts of North America*, 1766-1768, p. 172.

²Hosack, *Memoir of DeWitt Clinton*, 280.

³Sylvester, *History of Saratoga County, New York*, 128.

⁴*Hunt's Merchants' Magazine*, XXIII, 261, Sept. 1850; Hosack, *Memoir of DeWitt Clinton*, 260.

⁵Marshall, *Life of Washington*, V, 9-11.

⁶New York, *Assembly Journal*, 1784, *Memorials*; also Hosack, *Memoir of DeWitt Clinton*, 281.

⁷Hosack, *Memoir of DeWitt Clinton*, 282; Colles's pamphlet was printed at New York, 1785, by S. London, and entitled *Proposals of the Speedy Settlement of the Waste and Unappropriated Lands on the Western Frontiers of the State of New York, and for the Improvement of the Inland Navigation between Albany and Oswego*.

mining to develop this route as a rival to Washington's Potomac schemes.¹

In 1791, Governor George Clinton, in a speech to the legislature, recommended a policy of encouraging the development of means of communication. General Philip Schuyler was back of this movement and was a member of the joint committee that reported favorably on a bill for the purpose. This became a law on March 24, 1791, under the title of "An act concerning roads and inland navigation and for other purposes." This law authorized the commissioners of the land offices to cause the necessary survey to be made between the Mohawk River, at or near Fort Stanwix, and the Wood Creek in the county of Herkimer; and also between the Hudson River and the Wood Creek in the county of Washington; and to cause an estimate to be made of the probable expense that would attend the making of canals sufficient for loaded boats to pass, and to report the same to the legislature at their next meeting.² This commission was performed in September or October 1791 and a report of the survey and a map to accompany the same were in due time submitted, representing the project as feasible. In the meantime, Elkanah Watson and a party of friends traveled contemporaneously, mostly by water, from Schenectady to Geneva, and returning in October, Watson submitted the journal of his trip to General Schuyler and also in part to the legislature in December of the same year.³

The report of the survey above mentioned was ordered by the commissioners to be delivered to the governor on January 3, 1792, and was by him submitted to the legislature two days later with his strong recommendation. Through the efforts of General Schuyler, Watson, and General Williams, the bill introduced by the latter, providing for the opening of a lock navigation from the navigable part of Hudson River, to be extended to the Seneca Lake and to Lake Ontario, was finally passed by both houses on March 24 and by the council of revision March 30.⁴ The act incorporated two companies, "The Western Inland Lock Navigation Company," and the "Northern Inland Lock Navigation Company." The former was authorized to open a lock navigation from the navigable parts of the Hudson to Lake Ontario and the Seneca Lake through the valley of the Mohawk, and the latter was authorized to construct a similar work from the "boatable" waters of the Hudson to the head of Lake Champlain.

¹Watson, *History of the Rise, Progress, and Existing Conditions of the Western Canals in the State of New York*, 8, 9.

²Hosack, *Memoir of DeWitt Clinton*, 286-287.

³Watson, *History of the Rise, Progress, and Existing Conditions of the Western Canals in the State of New York*, 19-21; Hosack, *Memoir of DeWitt Clinton*, 289-299. Watson continued to advocate the scheme in various ways.

⁴Hosack, *Memoir of DeWitt Clinton*, 289; Poor, *Manual of Railroads*, 1881, iv; Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 134; O'Reilly, *Settlement in the West*, 186.

As soon as either corporation had actually expended and laid out the sum of \$25,000 in the prosecution of the work, it was to receive the sum of \$12,500 as a gift from the State, to be expended in the further prosecution of the enterprise.¹

In a short time both companies were organized under the direction of General Schuyler, who was made president, and operations soon afterwards were begun on the western route.² Elkanah Watson was appointed a director in the Western Company, and was further appointed, together with General Schuyler and Goldsbro'w Banyer, to explore, lay out, and direct the prosecution of the western canals. Proceeding with engineers and artificers to Fort Stanwix,³ the commissioners soon had 500 men at work.⁴ The work was begun at Little Falls in April 1793, with nearly 300 laborers, besides a competent number of artificers, inasmuch as the portage by land of nearly a mile was over a road of such character that the transportation of the empty boats was attended with unavoidable delay and great expense, as well as with great injury to the boats and their cargoes. On account, however, of lack of funds due to the non-payment of subscriptions, the work was arrested in September. In January of the following year work was recommenced, but was carried on with little energy, as the proprietors hoped for State aid. On March 31, 1795, this anticipation was realized by the subscription of 200 shares at \$50 each in the stock of each company on the part of the State. Further aid was given by the State by act of April 1, 1796; and by act of April 11, 1796, the State loaned the Western Company \$37,500, while by act of April 2, 1802, the State accepted shares in the stock of the company in payment of the debt due to the State.⁵ Work was accordingly recommenced with renewed vigor in May 1795, and the canal and locks were finished by November 17 of that year so as to permit the passage of boats. The canal was 4,052 feet long.⁶ It had 5 locks of nearly 9 feet each and with an area of 74 feet by 12 feet in the clear at the

¹Act of incorporation.

²Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 134; O'Reilly, *Settlement in the West*, 186. See *American State Papers, Miscellaneous*, I, 781, for original act and amendments; also various documents relative to these enterprises precede and follow. See New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, II, 606-607, for a digest of legislative proceedings with respect to these two navigation companies.

³Fort Stanwix in the early days was located where the present city of Rome stands. Fort Schuyler was located where the present city of Utica stands.

⁴Watson, *History of the Rise, Progress, and Existing Conditions of the Western Canals in the State of New York*, 22. See *American State Papers, Miscellaneous*, I, 734-735, for a summary of the works of the Western Company. See Hulbert, *Historic Highways*, XIV, 17.

⁵New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, II, 607-608.

⁶O'Reilly, *Settlement in the West*, 186, and *Hunt's Merchants' Magazine*, XXIII, 264, Sept. 1850, are both wrong in giving the length of this canal as nearly 3 miles. Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 135, gives the length as 1 mile, which was approximately correct. The statement in the *Report of the Board of Engineers on Deep Waterways*, House Doc. No. 149, 56th Cong., 2d sess., 1900-1901, LXXI, pt. i, 30, that in the spring of 1796 the western canals were opened from Schenectady to Seneca Falls for boats of 16 tons capacity, can not be substantiated. Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 25, also gives the length of the canal completed at Little Falls in 1796 as about 2½ miles. Colden is probably the source of the error in O'Reilly and *Hunt's Magazine*.

lower end, overcoming a fall of 44 feet 7 inches, besides one guard-lock without a lift at the upper end.¹ The locks first erected at Little Falls were of wood, but by 1801 they were entirely decayed and in that and the following year were rebuilt of stone at a cost of about \$7,500 each.² The depth of water in the canal was nowhere less than 3 feet; 2,550 feet of the canal were cut through the solid rock.

As an evidence of the improved facilities afforded by the canal, it was stated that the boats formerly carried over the portage did not exceed 1½ tons and were navigated by 3 men, who made the trip from Fort Schuyler to Schenectady, 112 miles and back, in an average of 9 days. Without back freight the transportation of a ton of produce thus cost one man's wages for 18 days. With the completion of the canal, however, boats of 10 to 11 tons were able to pass over the whole route,³ navigated by 5 men, who made the same voyage in 14 days, which, with no back freight, was equivalent to a cost per ton of one man's wages for 7 days. From the middle of July to the close of September, however, on account of water, smaller cargoes were necessitated, so that it cost one man's wages for 14 days to transport a ton of produce over the entire distance. The time required to pass the boats through the canal and locks did not exceed three-quarters of an hour, while the same burden, previously transported by land, required at least the entire day and often more. From November 17, when the canal was first opened, to December 18 following, 8 large boats and 102 small boats passed Little Falls and paid toll, amounting to £80 10s., exclusive of 9 boats which passed gratis on the day of opening.

Various causes had tended to increase the cost of construction, so that by this time the proprietors could promise no return in 5 years upon the funds invested, and State aid seemed the only hope. In 1796-97 the junction was made with Wood Creek, which had previously been deepened and straightened, opening up a waterway into the central and western portion of the State by means of the numerous lakes that formed a chain nearly to the Genesee River on the west and the Susquehanna on the south. In this same summer the company was also engaged in improvements of the Mohawk channel below Fort Schuyler, where many obstructions still remained. At German Flats a canal had been commenced with the object of avoiding two difficult rapids. At Cohoes the way was still closed by the falls. A survey had been made in 1795 and again in 1803, but nothing further was done. Up to 1798 the company had expended about \$209,357.

Improvements continued to be made, and some old construction was replaced, so that by 1807 about \$400,000 had been expended.

¹See report of the directors to the legislature early in 1796, in *American State Papers, Miscellaneous*, I, 770.

²*Ibid.*, I, 769.

³The canal and locks could pass boats of 30 tons burden, but impediments in the river between Schenectady and the falls and between the latter place and Fort Schuyler, yet to be removed, limited the navigation to boats of 10 to 11 tons.

The amount of stock outstanding at this time was 2,630 shares, from which \$232,000 had been realized. The amount expended beyond the capital comprised the gift of \$12,500 from the State, the payment on forfeited shares, and the receipts of tolls. No dividends had been made up to that time, except for one year of 3 per cent, while there was an indebtedness at that time of \$20,000.¹ The condition of the navigation of the route from the summit at Rome to the Hudson and to Lake Ontario in 1807 is shown in table 26.²

TABLE 26.

	Fall.	Distance by water.
	<i>feet.</i>	<i>miles.</i>
One lock from the canal at Rome to the river.....	9.75	....
Thence to the canal at German Flats the fall is.....	47.34	43
Thence, canal 1 mile long with lock at each end.....	10.00	1
Thence to the canal at Little Falls.....	2.10	4
Thence, canal at Little Falls, 6 locks.....	42.00	0.75
Thence to Schoharie Creek.....	47.98	36
Thence to Schenectady.....	62.67	21.50
Total fall from canal at Rome to Schenectady.....	221.84	106.25
From thence to Hudson River (estimated).....	200.00	15
Total fall from canal at Rome to tidewater.....	421.84	121.25
From the canal at Rome to Little Canada Creek, 1 lock at west end of canal and 4 locks and dams at Wood Creek.....	32.00	5
From Little Canada Creek to Oneida Lake.....	27.86	17.75
Oneida Lake.....	.....	20
From west end of Oneida Lake to Three River Point (estimated)....	13.00	18.75
Thence to Oswego Falls.....	25.00	11
Thence to Lake Ontario.....	75.00	12
Adding the portage at Oswego Falls.....	18.00	1
Total fall from Canal at Rome to Lake Ontario.....	190.86	85.50

The canals were 24 feet wide at the bottom, except through rocks at Little Falls, and passed boats drawing 2 feet of water and of 3 to 10 tons burden. Notwithstanding the assertion of the company that, save for the falls on the Onondaga (Oswego) River, 12 miles from Lake Ontario, and the succeeding rapids, nature had left little for art to accomplish in respect to navigation, it was stated in 1807 that there was a shoal at the outlet of Oneida Lake which was passable with difficulty at low water by boats carrying 30 barrels and that shoals and rapids extended thence to Three River Point. Such was the difficulty of navigation that it required 4 boatmen 3 full days to make the 24 miles from Three River Point to Oswego with not more

¹Campbell, *Life and Writings of DeWitt Clinton*, 45-46.

²*American State Papers, Miscellaneous*, I, 776.

³The distance between Rome and Lake Ontario by land was only 64 $\frac{3}{4}$ miles. *American State Papers, Miscellaneous*, I, 776.

⁴*Ibid.*, 774-779.

than 24 to 30 barrels. In this passage many boats were lost and the cargoes either damaged or entirely destroyed. While the navigation company had never undertaken the slightest improvement between Oneida Lake and Lake Ontario, the Mexico Turnpike Road Company had been recently incorporated to facilitate communication especially between these points.

The amount of tolls collected at German Flats, Rome, and Little Falls, exclusive of the agents' commission for collection, are given in table 27.

TABLE 27.

German Flats.		Rome.		Little Falls.	
Year.	Amount.	Year.	Amount.	Year.	Amount.
1796....	\$2,320.82	1797....	\$728.70	1803....	\$10,916.59
1797....	2,871.76	1798....	2,085.85	1804....	9,749.36
1798....	2,078.47	1799....	1,903.72	1805....	10,178.05
1799....	3,998.10	1800....	2,162.24	1806....	7,235.30
1800....	5,600.04	1801....	1,571.72	1807....	10,972.61
1801....	9,490.34	1802....	1,834.84	1808....	4,700.08
1802....	11,624.85	1803....	1,621.30	1809....	4,723.41
1803....	10,916.58	1804....	3,128.93	1810 (to	
1804....	9,445.05	1805....	2,832.09	July 8).	4,313.83
1805....	10,178.05	1806....	2,710.97		
1806....	6,835.29	1807 (to			
1807 (to		Oct. 1).	4,340.65		
Oct. 1).	4,453.20				

The income of the company in one year was said to have amounted to \$16,000. DeWitt Clinton asserted in 1810 that the improvements of the company might then be made for one-half the expense and that General Schuyler was inexperienced. The capital of the company at that time he stated to be \$450,000, of which the State owned \$92,000.¹ Clinton was told that probably a million dollars' worth of produce passed down the canal at Little Falls annually and as much up in goods. In April and May 1810, 151 boats had passed the falls, and in June the number was 91. While at Little Falls Clinton saw 2 boats pass through the locks, one of which—a Durham boat—had come from Ithaca with potash, part of which came from Oswego. This boat drew 28 inches of water when fully loaded, and had a capacity of 100 barrels of potash or 240 barrels of flour. It paid in lockage at Rome, \$16.50. The expense of land and water transportation along the Mohawk route was stated to be about equal, but the former was preferred on account of its superior safety and convenience. The rates of toll at Little Falls had been reduced since 1808 in order to meet the charges for transportation by land, and the wagoners, in their turn, reduced their prices

¹Campbell, *Life and Writings of DeWitt Clinton*, 46. The tolls at Little Falls are from Clinton's journal, and whether exclusive of agent's commission is not stated.

in order to meet the competition.¹ The difficulty of upstream navigation and the uncertainty and inadequacy of water transportation had thus directed attention to the improvement of roads and the construction of bridges. The resulting diversion of trade and decline of tolls were disastrous to the company's stock and rendered the lowering of tolls necessary. In 1808 the company surrendered so much of their grant as gave them any privileges beyond Oneida Lake.² The company presented a memorial to the State Senate February 21, 1810, setting forth incalculable advantages "that had already resulted to the agricultural interests of the State" from the improvements constructed. The company had spent all the money derived from the stockholders and from tolls, had incurred a further debt of \$10,000, and had not paid a dividend in 18 years. They asked the State to relinquish the profits on shares held by it, and to grant such other relief as should seem reasonable; there was still much to be done, but, owing to the unfavorable condition of their affairs, they were unable to borrow any money. On the whole, it was evidently felt that the company had too far disappointed expectations, and the legislature was not disposed to listen to them or to any of the others who came with similar requests for improvements at the outlet of Seneca and Oneida Lakes and other places.

March 13 to 15, 1810, joint resolutions were passed by the New York legislature to explore a route of inland navigation from the Hudson to Lake Erie and Lake Ontario.³ The next year the committee reported in favor of an independent canal and against further improvement of the natural waterways. An act was passed accordingly, in April 1811, by which commissioners were appointed to take charge of the whole matter. The Western Inland Lock Navigation Company demanded \$190,000 for their property rights, but the commissioners thought this too high, and in 1812 they were authorized to take over all the interests of the company upon such terms as they deemed just and equitable.⁴ Activities were suspended during the war, but were revived in 1817, and in June 1820 a report was made. The commissioners put their estimate and appraisement of the damages at \$151,820.80. Of this sum the individual stockholders (proprietors of 1,680 shares of stock, amounting to \$140,000) were to receive \$91,616, while the State as proprietor of stock amounting to \$92,000 was to receive the sum of \$60,204.80.⁵ The appraisal was confirmed by the

¹Campbell, *Life and Writings of DeWitt Clinton*, 41-50.

²Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 27.

³New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 48-49.

⁴*Ibid.*, I, 70, 87, 100-101, 194-195.

⁵*Ibid.*, I, 502-503. The capital stock, \$232,000, was calculated to be worth \$151,820.80. After ascertaining the amount of dividends for the last 8 years, including the sum then in the treasury but not yet distributed, and deducting the sum required to repair the works for present use and future preservation, the remainder was then capitalized at 5 per cent. This resulting estimate of \$151,820.80 was then checked by an estimate of the cost of reproduction, which approximately confirmed the estimate as determined above.

supreme court, August 11, 1820, accepted by the company September 15, 1820, and payments were received by the company on October 2, 1820.¹ The sum finally paid for the extinguishment of the rights of the company, including the assessed value of the shares held by the State, together with the cost of condemnation proceedings, amounted to \$152,718.52.² The canal commissioners reported, March 12, 1821, that there had been collected at Little Falls, since the rights of the company had been transferred to the State, the sum of \$450.56, the toll having been charged from Rome to the lower lock at Little Falls at the same rates per mile as on that part of the main canal then opened.³ According to a statement made December 31, 1824, the commissioners of the canal fund had up to the close of 1823 derived \$8,738 from the Western Inland Lock Navigation Company. During 1824 no such funds were derived, and presumably the works were removed.⁴ The company, notwithstanding its agreement to accept the award of the appraisers as confirmed by the supreme court, appealed to the legislature for additional compensation to the amount of at least \$48,384, on the grounds that the award was unjust and made on erroneous principles. Their petition was referred to the commissioners of the canal fund, who, after securing further information from the members of the former company relative to their claim, submitted the whole matter once more to the legislature. Presumably no further relief was granted.⁵

Though the works of the Western Inland Lock Navigation Company were thus superseded by a more efficient system, they had been of much benefit in the settlement of the western part of the State, and until the turnpike roads were finished they constituted the only practicable road for trade with that section of the State. Thereafter they served only to regulate the cost of transportation by land.⁶ Freight charges were, however, said to have been reduced from \$75 and \$100 per ton from Seneca Lake to Albany, to \$32 per ton from Schenectady to Seneca Falls, and to \$16 for return trip.⁷ Nevertheless,

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 506.

²*Ibid.*, II, 40, 287, 298.

³*Ibid.*, 14.

⁴*Ibid.*, 298.

⁵*Ibid.*, 24-27. Attached to the full report were four documents showing: (1) an account of the toll received from the year 1796; (2) a certified statement by the treasurer of the company; (3) copies of the laws relating to the company's notes of the views by their counsel, a copy of the receipts and expenditures, etc.; (4) a copy of the proceedings of the commissioners of the canal fund. These documents do not appear in the volume to which reference is here made, and are not accessible in the legislative journals at the University of Wisconsin.

⁶Renwick, *Life of DeWitt Clinton*, 148-149. It is asserted in *Hunt's Merchants' Magazine* XXI, 53, July 1849, that though the enterprise resulted in no pecuniary advantage to the stockholders, its influence upon the prosperity of western New York was "incalculable," and that thereby was laid the foundation of the trade to the West which later became so lucrative. See Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 24-26. See also letter of Captain Williamson, in *Documentary History of State of New York* (ed. by O'Callaghan), II, 662.

⁷*Report of Board of Engineers on Deep Waterways*, House Doc. No. 149, 56th Cong., 2d sess., 1900-1901, LXXI, pt. i, 30.

in 1818 the tolls charged by the company at Little Falls and the German Flats amounted to \$2.38 per ton, including the toll on the boat, while an additional sum of \$3.27½ per ton was charged for passing from Mohawk River through the canal at Rome into Wood Creek, thus making a total charge per ton for passing on an artificial navigation from 10 to 15 miles¹ which amounted to at least two-thirds of the average toll charged on the Erie Canal from Albany to Buffalo during the period 1820 to 1840 inclusive. The tolls for lading in general were \$5.25 per ton each way, in addition to which, there was a charge on the capacity of the boat of \$4.31 for a boat of 10 tons and 37½ cents for every additional ton.

Though having a separate existence, the Northern company was, especially in its early history, identical with the Western company for all practical purposes.² The company was required within 15 years from January 1, 1793, to complete navigation from a point in the town of Troy to Lake Champlain in a manner varying for the different sections of the channel. A committee appointed by the directors of the company "to examine Hudson River, the country between that river and Wood Creek, and that creek to where it discharges its waters into Lake Champlain, and to suggest the improvements requisite to accomplish the important object for which the company was incorporated," reported, October 30, 1792. The improvements suggested, with the accompanying estimates of their cost of construction, are shown in table 28.³

TABLE 28.

A dam from the east bank of Hudson River to Van Schaick's island, an embanked canal, 20 feet wide, from thence to the mouth of the mill creek, guard-gates, and lock at the upper end of this canal, and a lock at its lower end, estimated at.....	£2,500
A canal from Waterford to the ferry at Stillwater, 10 feet wide at the base, with 8 locks..	34,000
Clearing the banks of trees and brush from Stillwater to the falls above Saratoga.....	300
A dam and canal at those falls with guard-gates and locks.....	800
A canal, 20 feet wide, with guard-gates and 2 locks, at Fort Miller.....	8,000
Cutting the trees and brush from the banks between Fort Miller and Fort Edward.....	250
A canal 10 feet wide from Hudson River to Wood Creek.....	17,500
Clearing and deepening Wood Creek to Fort Ann, and clearing Wood Creek of the timber and other obstructions in it, and cutting trees from the banks, canal, and 2 locks at Skeensborough.....	9,000
Total.....	£72,350

To cover contingencies, the estimate was increased to £80,000. Work was begun on a canal in the vicinity of Stillwater in 1793, and in the next 3 years several other works were begun and many surveys made, but little was done towards completing them. Turnpikes and other roads were being rapidly constructed and their greater success

¹Hunt's Merchants' Magazine, XXIII, 616, Dec. 1850.

²Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 134-136. Both companies were organized and began operations under the presidency of General Schuyler; both companies had a common engineer, and the first reports to the legislature were joint reports. See *American State Papers, Miscellaneous*, I, 770.

³*American State Papers, Miscellaneous*, I, 765-770.

diverted traffic and public interest from the waterways. Perfect navigation from Albany to Lake Champlain was still deemed feasible, and promised to "produce a certain compensation and incalculable advantages to the State and General Government."¹ Opinions as to the utility of the works of the company differ, but the weight of testimony is that the operations were badly managed on account of the inexperience of the directors, that private means were inadequate for the accomplishment of the undertaking,² and that the improvements actually made were almost a total loss.³ The amount expended and thus lost is said to have been about \$100,000.⁴ In the origin and commencement of the Champlain Canal, which later superseded the improvements of this company, no reference appears to the earlier works, except as to the surveys.⁵

There were numerous less important efforts made towards the improvement of navigable waters. In 1797 the State itself began the improvement of the Hudson River, and in the next 22 years spent \$185,700 in unsuccessful attempts to improve the channel. In the interior of the State small improvements, often of considerable public utility, were constructed by individuals and private companies, who had the right to charge tolls.

THE ERIE CANAL.

The Erie and the Champlain Canals succeeded and superseded the works of the Western and of the Northern Inland Lock Navigation Companies respectively. They differ from the latter essentially. On the engineering side they represent the principle of independent canaling as opposed to the mere improvement of natural waterways, and on the administrative side they represent public as opposed to private construction, maintenance, and control. The inadequacy of private credit in the face of large expenditures immediately required in an enterprise of uncertain profitableness, and the unwillingness of the community that a work of such magnitude and importance should be subject to private control, were prime factors in this complete change of policy. Moreover, experience had proved that the benefits derived, such as improved land values and commercial profits, were so widely diffused in the community that they were not easily assessable by tolls in fair proportion. The failure of the two earlier com-

¹*American State Papers, Miscellaneous*, I, 767.

²Sylvester, *History of Saratoga County, New York*, 129.

³O'Reilly, *Settlement in the West*, 186-187. All the operations of the Northern Inland Lock Navigation Company were condemned and abandoned as utterly useless and the history and experience of both companies were powerful impediments to the enterprise of the Erie Canal, as the mistakes and errors of such men as General Schuyler and Mr. Weston led to doubt of the belief of other and more ordinary men in a canal 360 miles long. Hosack, *Memoir of DeWitt Clinton*, 380; *American State Papers, Miscellaneous*, I, 733.

⁴*Report of Board of Engineers on Deep Waterways, House Doc. No. 149, 56th Cong., 2d sess., 1900-1901, LXXI, pt. i, 30.*

⁵New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 289.

panies to afford an economical and satisfactory navigation, together with the general growth of sentiment in favor of independent artificial canals, was responsible for an entire departure from the channel of streams, which characterized the new enterprises.¹

The projection of the Erie Canal was not only related to the works of the Western Inland Lock Navigation Company, but was also related to the proposed canal around the falls of Niagara, and even after an independent canal to the west had been generally agreed upon, the question of its location and whether it should extend to Lake Ontario or to Lake Erie remained open. At the time of the incorporation (1798) of the company to construct means of lock navigation around the falls of Niagara it is probable that the idea of a canal directly from the Hudson to Lake Erie had not been conceived.² It had been asserted that Gouverneur Morris, as early as 1800, had suggested such a route, when in a letter to a friend in that year he asserted that "one-tenth of the expense borne by Britain in the last campaign would enable ships to sail from London through Hudson's River into Lake Erie,"³ but it seems uncertain whether, after all, he was not thinking of a passage via Lake Ontario and the falls of Niagara. It is further asserted that as early as 1797 or 1798, the idea was original with General Schuyler, by whom it was communicated to Morris.⁴ The latter again in 1803 spoke of "tapping Lake Erie," but in this instance, again, it is not made clear that he has in mind a canal to Lake Erie.⁵ The first direct public statement and advocacy of such an idea appears to have been by Jesse Hawley, who, according to his own assertion, made such a suggestion in private in April 1805,⁶ and who in an introductory essay published January 14, 1807, in the *Pittsburgh* (Pennsylvania) *Commonwealth*, over the signature of "Hercules," advocated a canal along the following route:⁷

"It ought to commence at the foot of Lake Erie, as soon as a suitable place can be found to afford a draft on its waters—to gain and preserve a moderate descent of ground it will have to pursue a northeastern course for some miles, it may then pursue an east course and cross the Genesee River, somewhere above its Falls, thence near to, and probably in the channel of, Mud Creek, an outlet of Canandaigua Lake, and follow thence into Seneca River; but leaving that, up stream to Jack's Rifts, for the purpose of preserving the head of water; thence meandering along between the high and low grounds of Onondago and Oneida counties, going south of their lakes, and let it fall into the Mohawk and mingle with its waters somewhere above Utica. . . . When

¹Hosack, *Memoir of DeWitt Clinton*, 261, 268.

²Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 27; see also Hosack, *Memoir of DeWitt Clinton*, app., for documents and discussion.

³Hosack, *Memoir of DeWitt Clinton*, 257; O'Reilly, *Settlement in the West*, 189; Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 31.

⁴Hosack, *Memoir of DeWitt Clinton*, 263, note.

⁵Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 31; O'Reilly, *Settlement in the West*, 189.

⁶Hosack, *Memoir of DeWitt Clinton*, 301.

⁷*Ibid.*, 306, note.

completed, this would afford a course of navigation from New York, by sloop navigation to Albany, 160 miles,—from Albany to Buffalo, by boat navigation, 300 miles, from Buffalo to Chicago by sloop navigation, 1,200 miles; making a distance of 1,660 miles of inland navigation upstream, where the cargo has to be shifted but three times.”¹

In a series of fourteen succeeding essays published over the same signature in the *Genesee Messenger* from October 27, 1807, to April 1808, Hawley continued his advocacy of his scheme, together with many other suggestions relating to similar improvements in various parts of the country. His plan was thus merely supplementary to the works of the Western Inland Lock Navigation Company, though his public advocacy of it no doubt exercised great influence upon subsequent developments, and the first board of commissioners, on an exploring tour in 1810, profited by his suggestions.

By an act of April 11, 1808, the sum of \$600 was appropriated for a survey, and James Geddes was appointed to examine the ground between Lake Erie and the Hudson. Geddes reported January 21, 1809, favoring an interior route that avoided Lake Ontario, on political grounds, as it would be entirely within the United States, and free from the dangers of the Great Lakes. This route still made use of the natural waterways. The men who were pushing the matter succeeded in interesting DeWitt Clinton, who, with Gouverneur Morris and five others, was appointed on a commission to explore and consider the whole route. They reported in 1811, and in that report the idea of using the natural waterways was definitely abandoned, and a canal leading directly from Lake Erie to the Hudson was recommended. It was to be on an inclined plane, of a descent of 6 inches to the mile, a scheme considered by many as very impracticable. The first act on the subject was introduced in the New York senate by Clinton. It instructed the commissioners to seek aid from the Federal Government to further the progress of the canal. No material encouragement from Congress was received, however, as Congress was too much occupied with questions of controversy between this country and Great Britain. Ohio and Michigan passed resolutions favoring the construction of the canal, although Michigan preferred a route through Lake Ontario, being comparatively little concerned over the possible diversion of trade to Montreal.²

The report of the commissioners was made in the senate of the State of New York, March 14, 1812. Estimates of the comparative cost of

¹It will be noticed that this proposed canal is not entirely independent of the natural channels of the waterways; extends only to the Mohawk near Utica, and neglects the obstructions at Schenectady. In essay No. 6 (Hosack, *Memoir of DeWitt Clinton*) Hawley asserted that the increase of the western trade would soon result in the improvement of Schenectady.

²*Niles' Register*, VI, 137-141, April 30, 1814. Resolutions to this effect were passed Jan. 10, 1812, and forwarded to the New York Commissioners. New York, *Laws of the State in Relation to the Erie and Champlain Canals*, I, 74.

transportation on a canal route by way of Lake Ontario and on a canal direct to Lake Erie were submitted and were favorable to the latter; the danger of further diversion of trade to Montreal, if the former route were followed, was reasserted. The cost of a canal along the latter route was estimated at \$5,000,000 to \$6,000,000, and the plan for a canal on an inclined plane was in part abandoned. The resources of the State were asserted to be sufficient for the undertaking and an immediate beginning of the work was favored. Negotiations had been entered into with the Western Inland Lock Navigation Company for the surrender of their interests to the State; some applications had been made to individuals along the line of the proposed canal for cessions of land, and steps had been taken to secure the services of a capable engineer.¹

On June 9, 1812, "An Act further to provide for the improvement of the internal navigation of this State" became a law. This law authorized the commissioners to purchase for the State the rights of the Western Inland Lock Navigation Company, to procure voluntary cessions of land, and to borrow (on the credit of the State) a sum not exceeding \$5,000 for the prosecution of the object of opening the proposed inland navigation, if deemed expedient after a full examination by a competent engineer.²

The war with Great Britain now intervened and until its close little was done toward carrying forward the plans previously undertaken. A resolution in the senate directing the commissioners to report on the progress made in the execution of the powers granted them by the act of June 9, 1812, was negatived on February 10, 1813. On March 8, 1814, however, the commissioners made a report that after due inquiries they had appointed an engineer who would shortly be directed to commence surveys; that they had also made further examinations in regard to the practicability of the work, and with very satisfactory results. Though not strictly within the scope of their instructions, the commissioners also reported in favor of the opening of the communications between Lake Champlain and Hudson River. The attempts to obtain the authorized loan in Europe were unsuccessful on account of the war, and no further measures had been adopted in relation to that object. The report concluded with once more stating the advantages of an interior route in reply to various objections which had been made.³

The advantages of the proposed canal were fully illustrated in the course of a correspondence between Gouverneur Morris and Robert Fulton. Fulton pointed out the anticipated advantages and gave

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 71-87.

²*Ibid.*, 194-196.

³*Ibid.*, 102-107. The plan of a canal on an inclined plane was expressly abandoned in this report.

figures to show the decrease in the cost of transportation which might be expected, and also the probable revenue.¹ He estimated the probable traffic on the proposed canal at 1,000,000 tons per year of 9 months.

"The attention of the legislature, however, was engrossed by the existing war. In consequence of the disarrangement of the national finances, the State of New York was obliged to employ its funds on objects which properly belonged to the General Government; and besides, a very considerable opposition had arisen to the improvement of inland navigation upon the great scale which the commissioners had proposed.² . . . It was also unpropitious to the adoption of the great design that the friends of improvement in internal navigation differed in opinion as to the course which ought to be pursued."³

As a result of these circumstances, the legislature on April 15, 1814, repealed that part of the law of June 19, 1812, which empowered the commissioners to borrow \$5,000,000.⁴

Though temporarily a disappointment, the interruption caused by the war was afterwards regarded by the friends of the project in a more favorable light, in that it prevented the employment of a foreign engineer and led to the obtaining of the funds necessary to build the canal from citizens of the United States, who received the interest thereon or the profits resulting from a later sale to foreigners. The necessity for a practicable communication between the seaboard and the frontier on the Great Lakes for military purposes was greatly emphasized by the exigencies of the war, while postponement for a few years brought the commencement and execution of the project at the time when funds were most easily obtainable.⁵

In the latter part of 1815, through the efforts of several prominent friends of the canal, including DeWitt Clinton, a convention of a few "respectable and influential" citizens was held. A memorial drawn by Clinton was presented to the legislature in favor of the projected inland navigation, setting forth the practicability, usefulness, and advantages to be derived therefrom with "so much clearness, ability, force, and eloquence that from that time all opposition was unavailing."⁶ Numerous other petitions in favor of the enterprise were presented early in the year 1816.⁷ Governor Tompkins, in his address to the legislature at the opening of the session in 1816, referred the project to the members for their consideration. On March 8, 1816, the commissioners reported in favor of the immediate commencement of the work, and

¹*Niles' Register*, VI, 169-172, May 14, 1814.

²See Hosack, *Memoir of DeWitt Clinton*, 488-489.

³Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 41.

⁴New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 115-116.

⁵Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 42.

⁶*Ibid.*, 43; New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 122-141. There was strong and general opposition among the representatives of the river counties of the Hudson and upon Long Island, both because the project was deemed impracticable, and because the opening of a better route to the West would injure the market for their own produce. Hosack, *Memoir of DeWitt Clinton*, 432.

⁷New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 119-122.

commended to the first attention of the legislature that part of the proposed route which extended from Rome to Seneca River as having the most immediate tendency to divert trade from passing down the Oswego River to Lake Ontario and thence to Montreal. They again represented the expediency of adopting measures relative to a communication between Lake Champlain and Hudson River.¹ This report, together with the various petitions, was referred to the joint committee appointed on that part of the governor's speech which related to roads and canals, and on March 21, 1816, the committee reported favorably in reference to both the western and the northern improvements, and proposed means for providing the necessary funds for those objects. The cost of completing the whole navigation on both routes, it was estimated, would not exceed \$6,000,000.

A bill was introduced entitled "An Act for improving the internal navigation of this State."² After many attempts to arrest, postpone, or curtail the project, due to apprehensions as to the practicability of the western canal and as to the ability of the State to carry out the work, the bill finally passed both houses and became a law on April 17, 1816. Van Rensselaer, Clinton, Young, Ellicot, and Holley were appointed commissioners by this act, empowered to devise and adopt measures "to facilitate and effect the communication by means of canals and locks between the navigable waters of Hudson's River and Lake Erie and the said navigable waters and Lake Champlain," to appoint engineers and cause the necessary surveys to be made, to open subscription books and ascertain the possibility of loans on the credit of the State, and to make estimates of the probable expense of the undertaking." An appropriation of not over \$20,000 was made to meet the expenses of the commissioners in carrying out these instructions, and the acts of April 8, 1811, and June 19, 1812, were repealed.³ A clause in the original bill providing that the commissioners begin work was, however, stricken out.⁴

On February 15 and on March 18, 1817, the commissioners brought in their reports.⁵ After organization, May 17, 1816, they appointed three engineers for the Erie and one for the Champlain Canal, each engineer assisted by a surveyor and a competent number of hands. The Erie Canal was divided into three great sections and an engineer assigned to each, the western section extending from Lake Erie to Seneca River, the middle section from Seneca River to Rome, and the eastern section from Rome to the Hudson. A fourth engineer was also appointed to survey a route from Buffalo to the east line of the Holland

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 116-118.

²*Ibid.*, 141-149.

³*Ibid.*, 184-186.

⁴Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 46; see Hosack, *Memoir of DeWitt Clinton*, 430-456, for an account of legislative proceedings in connection with the origin of the canals.

⁵On the western and northern canals respectively.

Purchase on the south side of the mountain ridge, which had many advocates but was finally abandoned. Explorations of the routes of both the canals were made and they were surveyed and marked. Profiles and maps accompanied the reports. The cost of the western canal was estimated at a little less than \$5,000,000, and that of the northern canal at a little less than \$900,000.¹

An effort was made in the same year to obtain aid from the United States and also from the States that had a common interest with New York in the proposed canals, namely, Vermont, Ohio, and Kentucky. Ohio signified its approval and pledged "effective cooperation," but did not contribute funds, for none were received from Congress or the States.²

On March 19, 1817, W. D. Ford, a member of the joint committee of the legislature appointed to report on the canal projects, brought into the assembly a bill entitled "An act concerning navigable communications between the Great Western and Northern Lakes and the Atlantic Ocean." According to Colden:

"The draft of this bill was prepared by De Witt Clinton, and the act was passed nearly as he drew it. In it was incorporated a financial system, which, at the request of a committee of the legislature, he had digested. Part of this system was the establishment of the Board of Commissioners of the Canal Fund, consisting of the Lieutenant Governor, the comptroller, the attorney and surveyor generals, the treasurer and the secretary of state.³ This board was charged with everything that concerned financial operations in relation to the canals. The bill provided ways and means to pay the interest on loans which might be made and the debts that would be created. There were donations of lands, which had been promised or made by individuals or companies, who would be particularly benefited by the canals; a small tax on salt manufactured at the salt springs, belonging to the State, and in the western country; a tax on steamboat passengers; a portion of the duties arising on sales at auction; proceeds from certain lotteries; and a tax of \$250,000 to be levied, at some future time, on lands lying within 25 miles of the Canals."⁴

The commissioners appointed by the act of April 17, 1816, were to be continued as the canal commissioners and were authorized and empowered to commence making the proposed canals by opening communications by canals and locks between the Mohawk and Seneca Rivers and between Lake Champlain and Hudson River, to establish reasonable tolls, and to have general administrative charge of the construction and operation of the canals. The canal commissioners were further empowered to enter upon proceedings for the condemnation and

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 268, 290-291.

²*Ibid.*, 272-287.

³This fund was to consist of such appropriations, grants, and donations as might be made for that purpose by the legislature of the State of New York, by the Congress of the United States, by individual States, etc., showing that aid was still hoped for from outside sources.

⁴Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 48.

purchase of the works of the Western Inland Lock Navigation Company.

The act was passed by large majorities in both houses and became a law on April 15, 1817.¹ The canal commissioners, as soon as practicable, began operations at Rome relative to the location of the middle section of the canal, *i. e.*, between the Mohawk and Seneca Rivers. The eastern end of this section was extended to Utica on account of the impediments to navigation above that point. After the perfecting and testing of the surveys, contracts were let for the beginning of the work. The first contract² was dated June 27, 1817, and on July 4, 1817, ground was broken³ at Rome with appropriate ceremonies. At the time of the report of the canal commissioners, January 31, 1818, about 58 miles were under contract and in various stages of progress, work equivalent to the completion of 15 miles having been done.⁴ About September 5 a re-examination of the Champlain Canal was begun and surveys and levels made to determine its location. The original plan was departed from to enlarge the dimensions of the canal and locks so as to make them correspond in size with the Erie Canal. The excavation of about 5 miles of the canal immediately south of Whitehall had been contracted for and the work prosecuted to some extent. The point of junction with the Hudson was at Fort Edward, and the canal was so located as to occupy the natural channel of the Hudson River and of Wood Creek for more than half the distance between the tidewaters of the Hudson and Lake Champlain.⁴

The system of supplementary branch canals was initiated when, on March 6, 1818, an act was passed incorporating the Chittenango Canal Company, which was authorized to construct within 5 years a canal from Chittenango Mills to the Erie Canal.⁵ On April 10 of the same year an act was passed relative to the harbor of Buffalo Creek, in Niagara County, providing for a survey and plan of improvement.⁶ On April 21, 1818, an act was passed to improve the funds and provide for the redemption of the funded debt of the State and it pertained in part to the finances of the canal project.⁷ In respect to these and other measures relating to the canal, "considerable and very able" opposition had to be overcome, as many were of the opinion that the resources of the State were then inadequate for the carrying out of the

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, I, 335-364; *Public Documents Relating to the New York Canals*, 267-275.

²See *Public Documents Relating to the New York Canals*, 294-307, for copies of the form of these contracts; 307-310, for specifications in relation to the construction, etc., of the Champlain Canal.

³Hosack, *Memoir of DeWitt Clinton*, 455-456.

⁴New York Canal Commissioners, *Report*, Jan. 31, 1818, in New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 366-382.

⁵*Ibid.*, 387-388. As completed the canal was 1½ miles long and had four locks, Mitchell, *Compendium of Internal Improvements in the United States*, 13. The company had a capital of 1,000 shares of \$30 each, New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, II, 608-609.

⁶*Ibid.*, 388-389.

⁷*Ibid.*, 389-392.

project in view.¹ DeWitt Clinton had in the meantime, however, become governor of the State, and continued to give the enterprise hearty and effective support, and in this he had the support of a majority of the legislature.

During the year 1818, in spite of unfavorable seasonal conditions in the first half of the year, the work was carried on with vigor. The remaining portions of the middle section toward the western end were put under contract and by about August 10 "the whole line became a scene of the most animated and laborious exertions." "From that time to the 10th of December, between 2,000 and 3,000 men, with half as many horses and cattle, and a considerable variety of mechanical inventions," were unremittingly employed upon the work. Some alterations in the proposed line of the western canal were made, and the middle section, as finally located, was 94 miles in length. Since this portion of the canal was intersected by 52 public roads, bridges were necessitated, and two of these had been erected and the others provided for.

The work actually accomplished on the western canal at the time of the report of the canal commissioners on January 25, 1819, was summarized as follows:

1. All the grubbing and clearing done except 5 miles.
2. Eight miles of excavation and embankment completed, inspected, and accepted.
3. Forty miles, all the excavation and embankment performed.
4. Ten miles more about half done.
5. Twenty miles more, one-quarter done; and the remaining 14 miles, lying in detached pieces, as yet unbroken. Two-thirds of all the deep cutting accomplished; the whole amount of mason work necessary in culverts, aqueducts, and bridges one-fourth done. The whole work estimated to be about two-thirds done. The sum of \$578,549 actually disbursed.

The commissioners caused surveys and a location of the canal to be made from Utica to the Hudson, and submitted estimates of the work. Work was also pushed vigorously on the Champlain Canal, where more than 10 miles had been completed and accepted. It was expected that navigation could begin in 10 months. Twelve thousand dollars was appropriated for a harbor at the mouth of Buffalo Creek, and the commissioners were given further powers to open canals between the Seneca River and Lake Erie. The fears lest the Ontario route should unduly benefit Montreal had prevailed with the legislature, inasmuch as the carriage from Buffalo to Montreal was \$30 per ton, while it was \$100 from New York to Buffalo.

In their annual report,² February 18, 1820, the commissioners stated that the middle section had been so far completed during the previous season that large boats had actually navigated it for a distance of 75

¹Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 50, 51.

²*Ibid.*, 55-56.

miles, while the remaining portion had also been completed later in the season.¹ On October 23, 1819, the commissioners navigated the canal from Utica to Rome and "found their most sanguine expectations realized in the celerity, economy, and excellence of its execution." The side cut at Salina, 1 mile and 43 chains in length, had also been completed, at a cost of \$6,044.07, making in all 96 miles of artificial navigation on the middle section, of which the 94½ miles of the main canal had cost \$1,125,983, or \$104,132 in excess of the original estimate. The cost of the whole 96 miles averaged, including every expense, \$11,792 per mile. On November 24, 1819, the Champlain Canal was also in a navigable state,² and water was admitted in December. During the year exploring parties had been employed on both the eastern and western sections of the Erie Canal, and a route had been located on the latter between the Seneca and Genesee Rivers. About 20 miles of the western section extending from the Genesee River to Palmyra had been put under contract and portions were in "process of vigorous execution."

Notwithstanding the unparalleled success of the undertaking and the fact that the completion of the middle section had already opened markets for a fertile and extensive region, attempts had been made to arrest the progress of the canal west of Seneca River, and similar efforts were anticipated when the canal should reach the Genesee River. Against all such attempts Governor Clinton warned the friends of the enterprise to be on their guard.³ During the session of 1820 various acts were passed relating to the further construction and financing of the canal and to navigation on the portion already opened.⁴

The next three years saw the work push rapidly forward. Navigation on the middle section was commenced throughout on May 20, 1820, but, on account of repairs, tolls were not charged until July 1. From that time until the close of the season \$5,244.34 was received in tolls. The small amount was due to the fact that the teamsters who plied their trade on the parallel roads made their rates extremely low rather than give up their business.

¹About October 15, 1819. Macauley, *The Natural, Statistical and Civil History of New York*, I, 143; Poor, *History of the Railroads and Canals of the United States*, I, 359; O'Reilly, *Settlement in the West*, 222; Gordon, *A Gazetteer of the State of New York*, 74.

²Speech of Governor Clinton to the legislature in 1820, in New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 437-440.

³Address at the opening of the legislature, 1820, in New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 437-440. See Beach, *Considerations against Extending the Great Canal West of Seneca River*, by Peter Plough Share, 15, 16. Governor Clinton estimated that the canal would be finished within 5 years. The degree of accuracy with which estimates were realized constitutes a striking and unique feature in respect to the undertaking.

⁴New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, I, 514-529. The work had been, however, much retarded in that portion of the middle section from Salina to Seneca River, where the route lay through a very unhealthful region. From the middle of July to October 1, about 1,000 laborers were disabled from this cause. *Ibid.*, I, 449-450. Considerable numbers of the laborers were swept off by various diseases, including ague, bilious and typhus fevers, and other diseases. Macauley, *The Natural, Statistical, and Civil History of the State of New York*, I, 166.

Some idea of the economic importance of the canal and of its real service in aiding the settlement and development of the country may be gained by a brief list of the articles and their quantities transported in the year 1821. It will be noted that the articles are large in bulk as compared with their value, and it was therefore necessary (if they were to move at all), that the transportation should be comparatively rapid and at low cost. The Lake Champlain region, as might be expected, sent lumber. Table 29 shows the amount which passed through the locks at Whitehall in this year.¹

TABLE 29.

Boards.....	150,000	Oak staves.....	104,000
Plank.....	98,000	Shingles.....	49,000
Pine timber.....cubic feet..	13,000	Saw-logs.....	3,480
Hemlock timber.....feet..	10,000	Rails.....	10,000
Tanners' bark.....cords..	29	Cedar posts.....	9,000
Firewood.....cords..	24	Fence posts.....	18,000

On the middle section of the Erie Canal the tolls received at Little Falls and at Rome on the old canal amounted to \$23,001.63. These were paid for the articles shown in table 30.

TABLE 30.

Flour.....barrels..	44,723	Shingles.....	923,000
Salt.....do	17,068	Oak staves.....	47,764
Provisions.....do	5,543	Hoop-poles.....	2,761
Pot and pearl ashes.....do	4,472	Staves.....	3,000
Oil.....do	153	Maple sugar.....pounds..	9,993
Wheat.....bushels..	43,078	Goose feathers.....do	1,736
Boards.....feet..	1,061,844	Rags.....do	8,100
Lime.....bushels..	71,000	Cheese.....do	5,860
Whisky.....gallons..	67,273	Paper.....reams..	100
Posts and rails.....	45,162	Beeswax.....pounds..	406
Gypsum.....tons..	772	Wool.....do	4,238
Timber.....feet..	48,981	Brick.....	14,000
Merchandise.....tons..	2,500	Hops.....pounds..	3,600
Household goods.....do	63	Grain.....bushels..	8,200
Butter and lard.....do	58	Wagons.....	47
Glass.....boxes..	2,481	Coaches.....	10

Besides these a variety of other articles of less importance was carried. The number of boats which had passed the collector's office at Rome amounted to 2,731.

By act of April 17, 1822, the canal commissioners were authorized to extend the Salina side-cut to the navigable waters of Onondaga Lake.² Within the year 1822 boats passed over the Erie Canal for a distance of over 220 miles. Only one-half the regular rate of toll was collected on the section west of Montezuma, however, because of the unfinished state of the work.

In their next annual report³ (February 20, 1824) the canal commissioners were able to announce that the Champlain Canal had been finished, "so that, from the tenth day of September until the setting

¹New York Canal Commissioners, *Annual Report*, 1821, pp. 27-28.

²New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, II, 69, 94.

³New York Canal Commissioners, *Annual Report*, 1824, pp. 150-180.

in of winter, the whole line was in operation." In May 1819 navigation in the eastern section was extended to Spraker's, 22 miles below Little Falls, and the remainder was ready for the reception of the water about October 1. On October 8, "the first boats passed from the west and the north through the junction canal into the tidewaters of the Hudson at Albany, the event being celebrated with considerable ceremony."¹ That portion of the Erie Canal thus opened extended 280 miles in length. A continuous canal navigation was thus inaugurated from the Genesee River and from Whitehall at the head of Lake Champlain to Albany.² The completion of the eastern section was a matter of great gratification on account of the formidable and appalling difficulties which were surmounted. It has been admitted by the canal commissioners and their engineers that if that section had been begun first, while their information on the subject of constructing canals was merely theoretical, the attempt to complete it would probably have been either entirely abortive or have been so imperfectly executed as to have defeated or perhaps postponed for a century the accomplishment of the work.³

One of the vessels arriving at New York in 1823, via the newly opened route, was a boat of 60 or 70 tons, which started in November from the head of the Seneca Lake, 70 miles south of the Erie Canal, entered that canal by the locks at Waterloo and the Seneca River, and, after a trip of 350 miles, was received at New York, where the owners were publicly entertained. After the opening of the junction canal in October, from 30 to 40 loaded boats were frequently seen to pass in the course of 24 hours.

Progress on the canal continued. In 1825 three hydrostatic weighing locks were constructed, and the number of boats greatly increased. The locks were in constant use night and day, and it was not uncommon to see 60 or 70 boats at a time waiting their turn. The capacity of the canal at the junction was exceeded even before the western part of the canal was completed. The number of boats which had passed on the canal below the junction had averaged 40 per day through the season; between the junction and Utica, 24 per day; between Utica and Rochester, 16 per day, including packet-boats, of which four ran daily. It was estimated that 10,000 boats had passed the junction within the season. Boats with commodities proceeded at the rate of 55 miles in 24 hours and boats with passengers nearly 100 miles in the same time. It was found that the produce which reached the Hudson by the canals amounted to about five times as many tons as the merchandise, etc., which was sent into the country. There had been a

¹New York Canal Commissioners, *Annual Report*, 1824, pp. 151-174; also Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 59-61; Hosack, *Memoir of DeWitt Clinton*, 457-459.

²Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 59.

³New York Canal Commissioners, *Annual Report*, 1823, p. 38; also Colden, *Memoir Prepared at the Completion of the New York Canals*, 62-63.

gradual increase in the size of the canal-boats since the first opening of the canals. Nearly \$300,000 in tolls had been collected on the Erie Canal during the season and more than nineteen-twentieths of the whole had been paid by citizens of the State of New York. As yet the regions west of Buffalo had hardly begun to pay their contributions for the use of the canal.¹ Governor Clinton, in his annual address to the legislature in 1825, noted the effect of the canals in the flourishing villages which had sprung up or been extended, in the increase of towns, and above all in the prosperity of the city of New York, where upwards of 3,500 houses had been built during the last year.²

On the 26th of October, 1825, the water was admitted into the canal at Black Rock, and the first boat ascended the locks at Lockport and passed the deep cut through the mountain ridge into the waters of Lake Erie. The navigation, which during the summer had terminated in the basin at Lockport, was now extended to Black Rock and to Buffalo, and thus formed an uninterrupted navigable communication from the great western lakes to the Atlantic Ocean.³ That part of the canal between Black Rock and Tonawanda Creek was completed and opened for navigation about the first of June, thus opening navigation from the portage on the ridge on the east to Black Rock, which was extended to Buffalo early in August. The work on the ridge was completed, as already noted, on October 26.

Toll was first taken on the canal west of the mountain ridge on October 1, collectors being appointed at Buffalo and Black Rock. Tolls were collected on the two canals to the amount of \$566,221.51, of which \$73,557.28 was derived from the Champlain Canal. The average rates of toll upon produce ascending the canal was something less than 1 cent per ton per mile, and on merchandise ascending the canals was 3 cents per ton per mile, while the Western Inland Lock Navigation Company in 1818 had charged \$5.75 per ton for passing on an artificial navigation of from 10 to 15 miles in its utmost extent. It was estimated that nearly one-half of the descending traffic could not have been transported to market without the aid of the canals and a low rate of toll. From the opening of navigation on April 7 to its close on December 12, 1825, the whole number of boats and rafts inward and outward in the junction canal amounted to 13,110. The whole traffic inward toward tidewater amounted to 185,405 tons, and the whole amount outward from tidewater to 33,669 tons, or a total, inward and outward, of 219,074 tons. The principal items in the inward traffic comprised 32,603,545 feet of boards, plank, etc., 655,912 cubic feet of timber, 221,093 barrels of flour, 435,273 gallons of domestic spirits,

¹New York, *Laws of the State in Relation to the Erie and Champlain Canals*, 1825, II, 266.

²*Ibid.*, 237.

³New York Canal Commissioners, *Annual Report*, 1826.

562,733 bushels of wheat, and 141,703 bushels of coarse grain. Of the outward traffic merchandise comprised 30,101 tons.¹

The number of persons passing Utica in freight and packet boats during the season of 1825 exceeded 40,000, and the number of boats, arks, and cribs which passed the same place equaled 42 for every day throughout the period of navigation.¹

The canal finished in 1825 was 363 miles in length,² in general 40 feet wide at the top, 28 feet at the bottom, and had a depth of 4 feet of water. The towpath was about 8 feet in width. There were 83 locks, excluding the 5 ascending locks at Lockport. The locks were each 90 feet in length within the gates and 15 feet in breadth, and were passable by boats, in ordinary times, in 4 minutes. They were of limestone or sandstone laid in cement made of water limestone. The guard-locks were constructed of the same materials. The locks were of solid structure and of excellent design, beauty, and utility. They consisted of five series ascending and descending. The first series, included in that part of the canal extending from Lake Erie to the Seneca River, a distance of 158 miles, were descending, and comprised 21 locks, of which 5 were at Lockport, where the locks were double, one set of 5 being used for the descent and another extra set of 5 for the ascent of the locks. The entire depression on this section of the canal was approximately 196 feet and the lockage aggregated 184 feet 10 inches. The 4 locks of the second series were ascending and were included in that part of the canal commencing on the east side of the Seneca River and extending to Jourdan's Basin in Onondaga County, a distance of about 15½ miles, and comprising a lockage of about 36 feet.

The next section of the canal consisted of a level of 12 miles, and at the end of this level the third series of locks—the second of the descending series—began, comprising two locks with a lockage of 17 feet and extending 7 miles to a point a little east of the village of Geddesburg, Onondaga County. The 3 locks in the fourth series were ascending and commenced with the lock about 80 rods east of Syracuse, or about 1¼ miles east of the last lock in the preceding series. These had an elevation of 26 feet in a distance of about 2 miles. At the last of these 3 locks began the long level stretching easterly to Frankfort, in Herkimer County, a distance of 69½ miles. The fifth and last series of locks, 53 in number, began at the east end of the long level and extended to Albany Basin. They were all descending locks

¹New York Canal Commissioners, *Annual Report*, 1826.

²That is, 363 miles from Albany to Black Rock. If the canal be regarded as ending at Buffalo, the distance would be about 1½ miles farther or a total of, say, 364 miles, which is often given as the length of the entire canal. By some the distance of 1½ miles from the harbor of Black Rock to Buffalo Creek was regarded as a branch. The length of the two canals, including 8 miles of navigable feeders, is given as 433 miles, in New York Canal Commissioners, *Annual Report*, 1828, p. 28.

and comprised a total lockage of 425 feet. The aggregate lockage on the entire canal amounted to 678 feet 10 inches, exclusive of the lockage of 22 feet comprised in the 2 locks opposite the city of Troy and exclusive of the lockage of 58 feet 9 inches comprised in the 5 ascending locks at Lockport. The descending series of locks included 616 feet 10 inches of lockage and the ascending 62 feet. The total number of locks, including the extra locks and those on the branches, amounted to 99 and the total lockage, calculated in a similar way, amounted to 831 feet 8 inches.¹ The level of the junction was 44 feet, the Schenectady level 226 feet, the long level 425 feet, the Montezuma level 370 feet, the Rochester level 506 feet, and the Buffalo level 566 feet, above the tidewater of the Hudson River.

The entire length of the canal was an artificial waterway, except about 10 miles near the western end, where Tonawanda Creek was utilized. The basins at the extremities were, except the moles, natural. The Albany basin was 4,400 feet in length, 200 to 300 feet in breadth, had an average depth ordinarily of 10 feet, and contained about 32 acres. Two moles 81 feet broad and rising 20 feet above low-water mark separated the basin from the river. The eastern mole was 4,400 feet long and extended from north to south. The southern mole was 300 feet long, extended from east to west, and contained a lock for the ingress and egress of boats. The basin would accommodate nearly 1,000 canal-boats and 30 sloops. A lock with a descent of 11 feet led from the canal into the basin. Opposite to the city of Troy there was a large basin communicating on one side with the canal and on the other with the Hudson River by two locks of 11 feet descent each. Boats passed through the basin into the Hudson and *vice versa*, and enabled the city of Troy to share in the benefits afforded by the canal.

The harbor at Black Rock was partly in Lake Erie and partly in the Niagara River. It was 4,565 yards in length from south to north and 88 to 220 yards in breadth. It comprised a superficial area of about 136 acres, and an average depth of about 15 feet. The harbor was formed by connecting Bird and Squaw Islands by a mole or pier 530 rods in length, 18 feet in breadth, and 16 feet in height. To this was added an embankment on Squaw Island, 260 rods long and 8 feet high. A pier 30 rods long connected Squaw Island with the main shore a little below where the canal enters the basin, through which lake vessels passed by means of a ship lock. It was finished in October 1825.²

There were several noteworthy aqueducts, culverts, mounds, and dams in connection with the canal. The aqueduct over the Genesee River at Rochester was 750 feet in length and had 12 piers and 11 arches. The two exterior arches were over mill races or courses and

¹There were also several hydrostatic locks for the weighing of boats.

²*Hunt's Merchants' Magazine*, XXIII, 392, Oct. 1850.

were each 40 feet span, while those over the river, 9 in number, were each 50 feet. The material was of red sandstone laid in cement. It was said to be the most splendid structure on the whole canal. The aqueduct over the Mohawk River, in Herkimer County, ranked next among the aqueducts. It was 214 feet long, 24 feet broad, and had 4 piers and 3 arches. The central arch had a span of 70 feet, the greatest on the canal. The two outer arches had a span of 50 feet each. It was built of limestone, and served to connect the old canal at that point with the Erie Canal for a feeder and for purposes of navigation. There were many other stone and wooden aqueducts.

The Irondequoit embankment was the greatest work of the kind in the canal. Its length was 1,650 yards, its height 40 to 76 feet. It was partly natural and partly artificial and extended in a winding direction across the valley of the Irondequoit and united and reinforced three narrow ridges which stretched along in the direction of the canal. The canal ran on the summit of the embankment and Irondequoit Creek ran under it through a stone culvert 245 feet long, 17 feet high, and 26 feet broad. With the main canal there were connected several branches or lateral canals, the most of which served the purpose of feeders.

THE CHAMPLAIN CANAL.

The Champlain Canal began at Whitehall, at the head of sloop navigation on Lake Champlain, and ran thence up the valley of Wood Creek to Fort Ann and to the Hudson at Fort Edward, then down the Hudson Valley for nearly 30 miles to the junction with the Erie Canal. In the course of the canal there were 6 ascending and 11 descending locks, which with lack of foresight were made 1 foot narrower than those of the Erie, thus preventing continuous navigation of the two canals. Four dams on the Hudson were built, with locks at each for the sloops that passed up and down. The entire canal of 64 miles was, as originally constructed, artificial for a length of $46\frac{1}{2}$ miles and natural for a length of $17\frac{1}{2}$ miles, Wood Creek being used for $6\frac{1}{2}$ miles and the Hudson River for 11.

The net actual cost of the two canals up to January 1, 1827, was \$10,207,328, or \$23,573 per mile. The accounts of the canals were kept as one fund, so it is very difficult to determine the proportionate cost of each. In their report of January 19, 1828, the canal commissioners gave the estimate just quoted, divided as follows: Champlain Canal, \$1,179,871.95; Erie Canal, \$9,027,456.05. The canal was opened November 4, 1825, with much ceremony and great rejoicing.

Besides the men already mentioned as having prominent parts in the origin of the improvement of inland navigation in New York, including the Erie Canal, there were many others whose services were only a little less important. Gallatin's report in 1808 undoubtedly aroused much interest in this as in other enterprises of a similar nature through-

out the country.¹ Senator Pope, of Kentucky, who introduced a bill into the Senate of the United States and spoke in its behalf, also added to the general interest of the public in the State of New York in works of internal improvement. Hugh Williamson in 1810 wrote essays entitled "Observations on navigable canals," "Observations on the means of preserving the commerce of New York," and "Additional observations on navigable canals," all of which related to the canals in the State of New York. Later he published a series of articles on the same subject, over the signature of Atticus, which was so widely distributed and read that the pamphlet containing them was several times reprinted. As early as June 1807, he had published, in a paper entitled "The Weekly Inspector," some general hints relating to the improvement of the route between the cities in the eastern part of the State and western counties.² Robert Troup, an agent for the Pulteney estate and one of the original subscribers to the Western Inland Lock Navigation Company, was also influential in the same direction.³ He, together with Gideon Granger, John Greig, John Nicholas, Nathaniel W. Howell, Myron Holley, Nathaniel Rochester, and several other leading gentlemen of Ontario County, was instrumental in convening a large meeting at Canandaigua, in that county, about the beginning of 1816, in the interest of the completed improvements.⁴ The following persons, many of them members of the legislature, were also of great service by their support of the project: Nathaniel Pendleton, William Duer, Peter A. Jay, James Lynch, Jacob R. Van Rensselaer, Elisha Williams, Martin Van Buren, Samuel Hopkins,⁵ George Tibbits,⁶ Benjamin Wright, and Canvass White.⁷

The engineers on the Erie Canal were Benjamin Wright, J. Geddes, Canvass White, David Thomas, Nathan S. Roberts, David S. Bates, Charles C. Broadhead, Valentine Gill, and Isaac Briggs. On the Champlain Canal, Lewis Garin was engineer for a short time, but William Jerome took charge in 1820.⁸

The Erie Canal, like a main trunk-line of a present railway system, could produce its greatest revenue and disclose its limit of efficiency only when it was fed by paying branches. Accordingly, renewed efforts were made to further the prosecution of other internal improvements in New York State.

¹Hosack, *Memoir of DeWitt Clinton*, 357.

²*Ibid.*, 357, 421-423; Colden, *Memoir Prepared at the Celebration of the Completion of the New York Canals*, 35. See Hosack and Francis, *American Medical and Philosophical Register*, 1810, for the articles written by Dr. Williamson.

³Hosack, *Memoir of DeWitt Clinton*, 423-429. Troup was also the author of several pamphlets relating to matters concerning the Erie Canal.

⁴See Hosack, *Memoir of DeWitt Clinton*, 425-428, for the resolutions passed at this meeting.

⁵*Ibid.*, 431-454.

⁶*Ibid.*, 487-493.

⁷*Ibid.*, 500-504. See between pages 86 and 87 for an engraving of a shaft with the portraits of the following men and the date when their services were chiefly important: G. Morris, C. Colden, G. Washington, C. Colles, J. Smith, E. Watson, P. Schuyler, G. Clinton, J. Hawley, J. Forman, T. Eddy, J. Platt, S. Van Rensselaer, G. D. Colden, and DeWitt Clinton.

⁸O'Reilly, *Settlement in the West*, 226.

THE OSWEGO AND THE SENECA AND CAYUGA CANALS.

Soon after December 1, 1825, the work of constructing the Oswego Canal was assumed by the State government of New York, and in the spring of 1827 over half of the work from the falls to Oswego harbor was completed.¹ An epidemic of malignant fever in 1828 delayed the work, but by April 28, 1829, the canal was opened to navigation throughout its whole extent.² When in 1839 the enlargement of the Erie Canal was being made, the inhabitants of Oneida County and of Syracuse desired to have similar improvements made on the Oswego Canal. It was claimed that the State, deriving a large revenue from the manufacture of salt on the public lands in Onondaga County, would be enabled to diminish greatly the expense of producing the salt, as the enlargement of the canal would cheapen the cost of the fuel used in salt manufacture, which came by way of the Oswego Canal; also that with the accompanying lessened cost of transportation for the salt, the State would be able to extend its market. However, the canal board reported:

"That in consideration of the great amount of canal work going on at that time, of the consequent vast expenditures thereby demanded, and of the scarcity of engineers and laborers for undertaking new work and the resulting high price of labor, the immediate enlargement was impracticable."³

The board nevertheless gave assurance that the enlargement would be made in the future; but by the "stop law" passed in 1824 no more work on the canals, except that absolutely necessary for the completion of work in progress, was allowed.⁴

The inhabitants of Ontario, Seneca, Wayne, Yates, Steuben, Tioga, Tompkins, Cayuga, and Onondaga Counties secured, in 1824, legislative enactment assuring further improvement of the Cayuga and Seneca Canal. Upon determining the best route from Seneca Lake to the Erie Canal and paying the Seneca Lock Navigation Company over \$33,000 out of \$150,000 appropriated by the act of 1825, in extinguishment of their claims, contracts for the work on the canal were let in June 1826. A general failure on the part of the contractors necessitated a second reletting in 1827. After some delays the work was completed and water was admitted into every part of the canal from Seneca Lake at Geneva to the Erie Canal at Montezuma, on November 15, 1828, and navigation was maintained for the rest of the season. The canal, as completed, was a little over 20 miles in length, with a tow-path on its bank, and consisted of an independent channel and more than 10 miles of slack-water navigation in the natural channel of the Seneca outlet. In all \$214,000 was expended on the project.⁵

¹Whitford, *History of the Canal System of the State of New York*, I, 451.

²*Ibid.*, 452.

³*Ibid.*, 454.

⁴For the history of the canal beyond 1860, the period of this study, see Whitford, *History of the Canal System of the State of New York*, I, 455-471.

⁵*Ibid.*, 476.

The Comptroller's report showed that during 1827 tolls to the amount of \$89,066.39 had been collected on the Erie Canal at Port Byron, of which sum \$75,000 had come from property transported down Cayuga and Seneca Lakes—\$35,000 of the latter sum from property which came from Cayuga Lake alone. By adding the tolls upon merchandise passing southward, the total revenue secured from the Seneca and Cayuga Canal was obtained. This, it was then asserted, was not the maximum possible, as the navigation was very imperfect. The boats were often impeded by the low water and by sand-bars at the northern extremity of Cayuga Lake, so "that it was necessary for those navigating the lake by means of steam tow-boats to leave the tow-boats at the upper Cayuga bridge, whence navigation to the Erie was rendered difficult and uncertain, not only by the sand-bars in the lake, but also by the adverse winds which were a frequent and sometimes long-continued cause of detention."¹ The legislature directed the canal commissioners to remedy the above-mentioned difficulties by cutting a side canal of over a mile long to East Cayuga, where a lock of 10 feet lift was ordered to connect with the lake. This was completed by July 1829.

Thereafter contentions continued over the Seneca and Cayuga Canal, between the residents at the head of Seneca Lake and those at the foot, concerning the water-level of the lake. The people of each locality by turns gained the ascendancy through enactments of the legislature. The marsh at the head of Seneca Lake was considered the cause of much illness. Portions of it were reclaimed and thereafter yielded very profitable crops, and a demand for further extension of the work of reclamation therefore arose. But the sides of the valley, in which the lake and its headwaters at the south lie, are high and precipitous, causing disastrous floods frequently to overflow the territory of the present villages of Watkins and Montour Falls. The people at the head of the lake, therefore, always strove to secure the lowering of the lake. The people at the foot of the lake, especially at Waterloo and Seneca Falls, whose industries depended on the water-power, always fought for every measure which would store up the water there, furnishing thereby greater power. For over 80 years, it is stated,² this dispute had gone on between the two localities. Recently controlling works have been placed in the outlet to allow free passage to the natural flow during floods and also to store the supply of the water at the normal level. Still the people at the head of the lake consider that their interests were injured. Long after 1840 the subject was a cause of strife in the State legislature.³

¹Whitford, *History of the Canal System of the State of New York*, I, 447.

²*Ibid.*, 478.

³*Ibid.*, 478-505, for history.

THE BLACK RIVER CANAL.

As the Erie Canal neared completion the people of the Black River region, comprising the inhabitants of Herkimer, Oneida, Lewis, and Jefferson Counties, petitioned the legislature for a canal connecting Black River with the Erie. Governor Clinton, in his annual message of that year, suggested such a connection. It was argued by the friends of the measure that the region was very fertile, had a considerable population of only one-fifth the district's sustaining capacity, and that it abounded in iron ore. With the canal built, it was maintained that the iron manufacture would increase and that the tonnage from it, from the agricultural products, and from various manufactured goods, would furnish an amount of tolls sufficient to pay good dividends on the money expended. Moreover, an increase in the value of the public lands, it was stated by the memorialists, would be secured upon opening the canal. Owing to the lack of access then to the Moose River tract containing 219,000 acres, no sale was possible. With the canal built, it was urged that the tract would find early purchasers. Further, it was urged that the canal would assist in securing the northern frontier by reducing the cost of transportation of military supplies to Sackett's Harbor, the most suitable station for the naval force on Lake Ontario. Another benefit indicated, and the one which has since proved to be the greatest, was that a permanent and ample supply of water could be furnished to the Rome level of the Erie by this Black River feeder.

The legislature finally provided for the surveys of two routes for the Black River Canal: one from the Erie Canal in Herkimer County, thence to the upper waters of Black River, and by the most favorable route to Ogdensburg on the St. Lawrence; the other, beginning on the Erie farther to the west at Rome, in Oneida County, was to proceed by the way of Black River to Ogdensburg. Dispute soon arose among the legislators in reference to the western route. Some insisted that the law directed the route to be surveyed by way of Camden, the Fish Creek Valley, to the Black River, and thence to the valley of Indian River, to Black Lake and Ogdensburg. Others insisted the way was to be more to the east, by Boonville to Carthage, to the Oswegatchie River and Ogdensburg. Petitions continued to reach the legislature for the canal, some favoring the Boonville route and some the Camden.¹ Lack of unanimity in reference to which route should be adopted and of sufficient financial resources in the State treasury delayed action.

In 1828, upon the request of citizens from Lewis, Oneida, Jefferson, and St. Lawrence Counties, the legislature passed the bill incorporating the Black River Canal Company, with a capitalization of \$400,000.²

¹See Whitford, *History of the Canal System of the State of New York*, I, 507-510, for account of advantages and difficulties of each route.

²*Ibid.*, I, 511-512, for the complete provisions of the bill.

Surveys were inaugurated, and the report of Engineer Cruger favored the use of inclined planes similar to those in operation on the Morris Canal in New Jersey.¹ An unwillingness on the part of the canal commissioners to recommend the adoption of the structures used on the Morris Canal until the inclined planes were more fully tested delayed further legislative action regarding the construction of the Black River Canal until 1832.

In order to estimate the amount of revenue which could be secured from the proposed canal, a committee secured in 1830 returns from 15 towns addressed, showing an aggregate tonnage of 30,766. Giving a proportionate estimate to the 19 towns failing to reply, an aggregate total was obtained of 50,766 tons, on which tolls, it was said, would amount to over \$49,000 yearly.²

In 1831 the legislature received more petitions from Oneida, Lewis, Jefferson, and St. Lawrence Counties advocating the canal. It was urged that the tide of immigration at one time had set strongly in the direction of the Black River district and that the territory was increasing rapidly in population and wealth when the construction of the Erie Canal had destroyed its prosperity. The statement was made:

"Immigration was diverted into different channels; more distant citizens could transport their products to market with such facility as to compete with the inhabitants of the Black River section, and destroy the advantage of their proximity to market, which they had formerly enjoyed and for which they had paid in the advanced cost of their land."

In consequence, the petitioners asserted their property had depreciated in value. The Black River Canal was desired for the purpose of counteracting these disastrous effects.² However desirable and feasible the canal appeared, the actual work of construction was not begun until 1838 and work moved slowly thereon after that date. In 1840 the State legislature began its appropriations for the work, voting \$250,000 towards the canal that year and \$300,000 more in 1841.³ In 1850 the canal was completed from Rome to Port Leyden and used during the following season.

THE CHEMUNG CANAL.

The legislature deliberated in vain upon the Chemung Canal in 1827 and 1828, but in 1829⁴ an act was passed authorizing the canal commissioners to construct the canal on the route as surveyed from Elmira to Seneca Lake, at a cost not to exceed \$300,000. A jollification meeting was held in Elmira over the victory. Still the commissioners did not act, and in 1830 presented to the legislature the

¹For an account of the working of the inclined planes and picture of canal-boat on inclined plane on Morris Canal, see Whitford, *History of the Canal System of the State of New York*, I, 513-523.

²*Ibid.*, 524.

³*Ibid.*, 540.

⁴*Ibid.*, 612.

estimate that the annual revenue from the canal would not be more than \$22,000.¹ A movement to repeal the law was instigated by the same influences that led the initial opposition to the Chemung Canal.

The friends of the canal insisted that the State stood pledged to perform the work, as the conditions specified had been met. Eventually the legislature concurred in this position and the canal was again ordered. In May 1833 the canal was completed and ready for navigation, at a cost of \$314,395.51.²

The canal and feeder did not satisfy the people engaged in doing business upon it, as there was not always sufficient depth of water to navigate with full loads. This insufficiency was due, it was claimed, to an improper termination of the feeder and a wrong location of the dam. In consequence, the assembly was petitioned in 1838 to have the feeder extended to a point at or near the junction of the Cohocton and Tioga Rivers.

At the next session petitions both for and against the extension and for the improvement of the chute at the feeder dam were presented to the legislature. Those engaged in the lumber business complained of their great losses, due to the abruptness of the descent and the large volume of water during freshets. They desired that the chute be lengthened and a dam be placed at Towanda, on the Susquehanna River. It appears that some of the petitioners soon changed their views.³

The Tioga Coal, Iron, Mining, and Manufacturing Company was incorporated in 1828 and authorized in 1833 to construct a railroad from Corning, situated at the head of navigation on the Chemung Canal feeder, to the State line of Pennsylvania, where it would connect with the railroad extending to their coal mines at Blossburg, Pennsylvania, 40 miles from Corning. This company opposed the extension of the chute as a measure which would "promote the speculation of a few individuals at the expense of others who are engaged in the construction of public improvements for the public good as well as their own."⁴ At this time, 1838-39, Pennsylvania was building the North Branch division of its canal. The part remaining to be built was near the State line. Pennsylvania then took the initiative in bringing about the concerted action of New York and Pennsylvania in securing connection with the New York canal. As a result of conferences, the New York legislature directed the surveys to be made for the continuation of the Chemung Canal to the State line near Tioga Point. Economic conditions caused a delay in the construction until 1846, when a private company took up the work.⁵

¹In 1840, \$4,958.41 in tolls were collected, in 1845, \$21,444.53, and then receipts dropped, but returned to \$21,000 in 1854; in 1878, however, they were only \$1,919. Whitford, *History of the Canal System of the State of New York*, II, 1064. ²*Ibid.*, I, 616. ³*Ibid.* 618-620.

⁴*Assembly Document No. 198, 1839*, pp. 4, 5, given in Whitford, *History of the Canal System of the State of New York*, I, 621.

⁵Whitford, *History of the Canal System of the State of New York*, I, 624.

In the State election of 1830 the canal and internal-improvements questions were prominent issues. The Albany Regency¹ was charged with combining with the canal commissioners "to raise the canal duties so as to divert our commerce into the Welland Canal of Canada; . . . that they opposed the railroad contemplated between Albany and Boston."² The minority report favoring the canal claimed that the project was not only feasible, but that it would promote an extensive trade in coal from Pennsylvania and afford a market for New York products. On final passage the bill was defeated in the Senate by a vote of 17 to 12.³ Other failures resulted. A controlling element long resisted the construction of canals which might lead a considerable trade away from the Erie Canal and New York City down the Susquehanna to Philadelphia and Baltimore.

THE CHENANGO AND GENESEE VALLEY CANALS.

Success came to the Chenango Canal promoters in 1833 through the assistance of Governor Marcy. In his annual message of 1833, he laid down the rule which should guide the legislature thereafter in deciding upon canal construction. "If the revenue," he said, "promises to be sufficient to keep it in repair when finished, to defray the expenses of superintendence and the collection of tolls, and to meet the claims for interest on the capital expended, sound policy requires that it should be constructed."⁴

The canal was completed in 1836 and navigation begun thereon in May 1837, after nearly all the surplus products of that year had been marketed. In 1838, however, the receipts from tolls rose to \$20,430.87. This sum, it was thought, was small because of the high rate of tolls. The citizens of Binghamton, in consequence, petitioned for a reduction of tolls to an equalization with the tolls on the Erie. The legislature so enacted in 1839.

The prosperity which rapidly followed the opening of each section of the Erie Canal aroused the people of the Genesee River Valley to a renewal of their efforts to secure their desired canal construction. Numerous petitions were sent to the legislature in favor of a canal. In 1827 there were 15, some asking for the construction of a canal from the Erie by way of Tonawanda Creek to the Allegheny River at Olean; some by the Genesee route, and others for a canal from Buffalo to the Allegheny along the valley of the Conewango Creek.⁵ The desire for

¹A name popularly given to a group of New York Democrats living at Albany, who, from 1820 to about 1850, controlled the nominating conventions and patronage of their party within the State, and exerted a powerful influence in national as well as State politics.

²McCarthy, *Anti-Masonic Party*, in American Historical Association, *Report*, 1902, I, 399.

³*Niles' Register*, XXXIV, 176, May 10, 1828, records that Hager, of the New York Senate, who voted against the bill, was burned in effigy in Chenango County.

⁴*Senate Doc. No. 1, 1833*, p. 16, quoted in Whitford, *History of the Canal System of the State of New York*, I, 679.

⁵Whitford, *History of the Canal System of the State of New York*, I, 710.

the canal increased from 1830, and by 1834 the territory interested was considerably widened. Even the common council of New York favored the canal, desiring to open intercourse with Pittsburgh and the bituminous-coal district of western Pennsylvania.

In 1836, as stated, the canal was begun. The portion between Rochester and the Genesee River dam near Mount Morris, a distance of 36 miles, was opened September 1, 1840. Warehouses were erected along the route and freight boats began to transport the produce and merchandise. The short season of 1840 resulted in the collection of \$6,929.15 in tolls.

THE DELAWARE AND HUDSON CANAL.

The Delaware and Hudson Canal was constructed by a private corporation under acts passed by the legislatures of both New York and Pennsylvania. Its inception, construction, and progress are so important in the industrial and commercial development of New York and the Delaware Valley, and the canal itself is such an important link in the transportation system of New York as well as Pennsylvania, that an account of its construction should be given here.¹

The Wurtz brothers, of Pennsylvania, were the initiators of the canal project which materialized. The account of their discovery of the importance of the Lackawaxen and Lackawanna coal district, their extensive purchases of land therein at prices averaging from 50 cents to \$3 an acre, is interesting, but no part of the present story.² The Lackawanna coal fields reached out east of the Susquehanna to within 100 miles of the Hudson and suggested the necessity of reaching the New York market. First an improvement of the navigation of the Lackawaxen River was desired, in order to facilitate coal transportation to the Delaware. Providing for this by an act of the Pennsylvania legislature at the session of 1822-23, the Delaware and Hudson Canal Company was incorporated in New York on April 23, 1823, to establish water communication with the Wurtzs' coal fields. The eleven commissioners authorized to receive subscriptions and perfect the organization of the company were representative citizens of New York City and Ulster and Orange Counties.³

After the organization of a board of managers on March 8, 1825, with Philip Hone as president, the usual work of making numerous surveys and estimates of construction costs was undertaken. The company was allowed banking privileges in New York, with power of issuing notes to the amount of \$1,500,000, on condition that at least \$150,000 a year be expended on construction and that the canal be completed within 7 years.⁴ On April 1, 1825, the State of Pennsylvania gave permission to the company to improve the Lackawaxen, operate

¹Jones, *The Anthracite Tide-water Canals*, 74-75.

²Whitford, *History of the Canal System of the State of New York*, I, 729-731.

³*Ibid.*, 731-732.

⁴*Ibid.*, 735.

the canal thereon, and charge tolls. Supplementary acts followed. On April 8, 1826, Pennsylvania granted the company the right to connect the mines with the canal by a railway. This railway and the projected lateral canals engaged much of the attention of the company's engineers. From the original manuscript notes of Chief Engineer Wright it is seen that the company early connected its project with the other canals constructed or contemplated and appreciated the advantages to be derived from a complete system of interior communication. Wright said:

"This main line was but part of a great scheme of internal improvements by lateral canals, which would hereafter be executed along the valleys of the Unadilla; the Chenango and its branches, from Owego to Cayuga lake; from Newton [now Elmira] to Seneca Lake; thus opening communication with the Erie Canal for the exchange of productions peculiar to each."¹

He fully expected that within 5 years after the completion of the Ohio Canal the traffic of the growing States on the Lakes and the western rivers would be too great for the capacity of the Erie and that this southwest line would relieve the pressure. The company was assisted financially by New York when the legislature passed the act on March 10, 1827, authorizing special certificates of stock to the amount of \$500,000 to be issued by the company, bearing 5 per cent interest and redeemable at the pleasure of the State after 20 years; the company to give a first mortgage on its possessions to New York State; the company was also authorized to borrow \$300,000 on a second-mortgage security. An increased use of anthracite coal occurred at this same time to encourage the company.

The work of construction on the Lackawanna section proceeded with unimportant interruptions. A railroad was projected from Honesdale to the mines at Carbondale, a distance of 15 miles. Good turn-pike roads were also constructed by the company between the mines and the canal terminal and wagons brought the coal down while the construction work went on.

Unexpected delays occurred on the Delaware-Hudson section. The bank, made of porous earth and coarse gravel, allowed much leakage, which necessitated continual repairs. The adjacent industries were affected by the withdrawal of laborers to work on the canal, and, although some boats passed in 1827 from the Hudson to Honesdale, the head of the canal, few supplies passed over the route in seeking a market, and the people were disappointed.²

The board directed its engineer to plan a railroad over the summits of the Moosic Mountains. At the time the 3 miles of railway at

¹From Wright's MSS. as given in Whitford, *History of the Canal System of the State of New York*, I, 741.

²*Ibid.*, 742.

Quincy, Massachusetts, was the only line of railroad in operation. The canal was reported in use in October 1828,¹ but to no great extent; in 1829 only 7,000 tons of coal passed over it.²

A second loan was secured from New York State in 1829,³ and work was pushed towards the completion of the line. The railroad was built from the mines to the summit level by 5 planes in about 3 miles. Whitford states:

"Chains passed over sheaves, and steam power from stationary engines were first used for ascending cars. Later, these chains broke and were replaced by rope, which in turn gave way to steel cables. After passing the summit level of a mile and a half, there came a sharp descending plane of nearly 500 feet within a mile. To retain motion on the steep descending grades, Mr. Jarvis (the engineer) invented a simple yet curious contrivance of sails connected with the gearing, which, revolving in opposite directions, successfully held the cars back to a velocity of about 4 miles an hour. On the lower grades at the river end of the line, the locomotives brought from England were intended to be used. On August 8, one of these, the 'Stourbridge Lion,' was placed upon the rails at Honesdale for its trial trip. It was found that the weight of the locomotive was too much for the road as constructed, and it was withdrawn from service. Horses and mules were substituted and later replaced by steam and gravity."⁴

The complete line consisted of 106 miles of canal, with 16 miles of railway to the mines.

In 1831 the railway transported 54,328 tons of coal from March 20 to November 5. From May 1 to December 1, the open season of the canal, 52,578 tons left Honesdale and 51,578 reached the tidewater. In that year the canal tolls were \$19,394.05 and the railway revenue \$1,160.59. A clear profit of \$34,000 was made on total sales.⁵ In 1832, 90,000 tons of coal and 3,000,000 feet of lumber went down the railroad. Carbondale and Honesdale rose from pine forests to villages of 2,000 and 1,200 inhabitants respectively. Anthracite coal, that year, brought from \$12 to \$17 a ton in New York, which caused the canal locks to be operated day and night and premiums were offered for quick trips. The seasons of 1833 and 1834 were ones of general depression, and in 1834 only 43,700 tons were forwarded. The company's dividends were suspended. For several years varying fortunes followed the company's efforts. Bitter opposition is reported to have followed them and many manufacturers refused to use their coal. Assaults were made in Wall Street on the company for speculative purposes. Miners and laborers' strikes and "turnouts" occurred. Still shipments improved, and in 1840, 148,480 tons were brought down on the canal and a net profit of 11 per cent was secured on the year's business.

¹*Niles' Register*, XXXV, 130, Oct. 1828.

²Delaware and Hudson Canal Co., *Annual Report*, 1833, p. 10.

³See Whitford, *History of the Canal System of the State of New York*, I, 744, for provisions of the loan.

⁴Whitford, *History of the Canal System of the State of New York*, I, 744.

⁵*Ibid.*, 746.

The period of this study closes with the output of coal crowding the transportation facilities of the canal, and improvements being made to meet the greater demands. Leading men in the southern and western counties of New York, in 1826 and thereafter, exhibited great interest in a canal through the southern tier of counties, connecting the Hudson River with Lake Erie. When Benjamin Wright, the engineer of the Erie Canal, declared that the route was not feasible for a canal but might be for a railroad, the interest was gradually transferred to this new means of transportation. William C. Redfield was the first to plan a system of railroads connecting the waters of the Hudson with those of the Mississippi and outlining the route of the present New York and Erie Railroad.¹

¹Redfield, *Sketch of the Geographic Rout [sic] of a Great Railway.*

CHAPTER VII.

CANALS AND WATERWAYS IN PENNSYLVANIA.¹

Economic interests of the State, 207. Improvement of the river systems, 208. The Susquehanna, 210. The Union Canal, 214. The Chesapeake and Delaware Canal, 217. Susquehanna and Tidewater Canal, 222. The Delaware and Raritan Canal, 227. Extension to Pittsburgh—The Pennsylvania Canal, 234.

ECONOMIC INTERESTS OF THE STATE.

During the decade 1820 to 1830, New York increased its population by more than a half a million, Pennsylvania by nearly 300,000, Ohio by more than 350,000, Indiana by nearly 200,000, Illinois by more than 100,000. The increase in the three middle Atlantic States—New York, New Jersey, and Pennsylvania—amounted to nearly 900,000; and in the five east-central States of Ohio, Indiana, Illinois, Kentucky, and Tennessee, the increase for the decade aggregated more than a million. Pennsylvania as well as New York felt the impulse of commercial expansion by trade with the rapidly growing West. Pennsylvania, however, was so situated physiographically that most of its trade was carried out of the State, away from its chief cities of Philadelphia and Pittsburgh. Especially was Baltimore, at the base of the Susquehanna system, and possessed of the better routes to the Ohio, a menace to the commerce of Pennsylvania, but on the north, also, trade was being drawn away by Albany and New York City.

In the development of Pennsylvania well-defined economic districts appear.² The great grain section of the southeastern counties was, in consequence of its earlier settlement and of the richness of its soil, the most populous as well as the richest agricultural section of the State. In this district, while the counties of Delaware, Philadelphia, Montgomery, and Chester found a market in Philadelphia, the remaining counties of Lancaster, York, and Adams (agriculturally the richest portion) were physiographically connected with the Baltimore market and sent thither their produce by roads and the Susquehanna. The inhabitants of this portion of the district were conservative by hereditary tendencies, and since their interests were directed to the South rather than to the West, they naturally did not approve of the State's expenditure of millions for connecting Philadelphia with the West.³

North and west of the above district was that of the Great Valley, also a section of uniformly good soil, extending from the southern line of the State northeastward to the Delaware, and so crossed by the Lehigh, Schuylkill, and Susquehanna Rivers that the inhabi-

¹A large part of this chapter is compiled from Bishop, *The State Works of Pennsylvania*, in *Transactions of the Connecticut Academy of Arts and Sciences*, XIII, pp. 149-297. This monograph was prepared for the *History of Transportation*.

²See Burrowes, *State Book of Pennsylvania*, 74-93, for map and description of these districts.

³See McCarthy, *The Anti-Masonic Party*, 428, for county map of Pennsylvania showing canal problems.

tants were largely interested in improving these rivers. Philadelphia hoped to overcome Baltimore's advantage of position in maintaining her hold on the lower half of the district, where, it may be noted, little interest was taken in Pennsylvania's west-bound line.

The anthracite-coal counties lie grouped just north of the Great Valley district toward the northeastern boundary-line between the main Susquehanna and the waters of the Lehigh. Coal was discovered here in 1791, and for more than 20 years legislation undertook to provide for the improvement of the Lehigh. Not until 1816, however, when it was discovered that anthracite would burn, was river navigation actively promoted.

IMPROVEMENT OF THE RIVER SYSTEMS.

As early as 1791, a society under the presidency of Robert Morris existed in Pennsylvania for promoting improvement of roads and of inland navigation. This society presented a memorial to the legislature recounting Pennsylvania's favorable situation, the great extent of her territory, and the variety of her products, and indicating numerous needed improvements in the means of transportation.¹

It was one of Washington's observations that men look towards the direction from which their rivers flow. The settlement of the trans-Allegheny region during the eighteenth century had impressed this fact upon his mind to such an extent that the construction of artificial waterways between the East and the West became one of his most abiding concerns. He saw clearly that our political union, as well as our economic welfare, depended upon the creation of trade relations between the two sections, and the only way of establishing such relation at that time was by improvement of river-beds and construction of canals.²

Several States had made advancement in the construction of roads with this end in view before the policy of water transportation had obtained much headway, but even the best turnpike system failed to create and foster adequately a community of interests between sections separated from one another by 200 or 300 miles. The cost of transporting 1 ton for 1 mile over a turnpike road averaged 13 cents, or \$13 for 100 miles, whereas the cost of water transportation was less than one twenty-fifth of this charge. This difference in cost was set forth in a striking manner by the directors of the Chesapeake and Delaware Canal in their memorial to Congress in 1805. The memorial asserted that a ton of goods was frequently brought from Europe, a distance of 3,000 miles, for 40s. sterling, or about \$9, and that this rate admitted the importation of salt, coal, stone, lumber, iron, and other bulky articles from beyond the seas for less than it cost to carry the same

¹*An Historical Account of the Rise, Progress and Present State of the Canal Navigation in Pennsylvania*, 1-10. Memorial dated Feb. 7, 1791. Full text of the memorial is to be found in Hazard, *United States Commercial and Statistical Register*, II, 119-222.

²Washington, *Writings* (Ford's ed.), X, 433-437.

articles upon a good road for 30 miles. This claim was well supported by facts. Several forges were operated in Lancaster County (Pennsylvania) along the Lebanon Hills before the Revolution, but these supplied only local needs prior to the completion of water communication with the seaport cities, because the cost of wagon transportation for the distance of 75 miles was more than twice the amount charged for transporting the same amount across the Atlantic.

The Delaware navigation was first discussed and a route traced from Trenton Falls to the Northeast Branch of the Susquehanna on the Otsego Lake, a distance of 300 miles. A second route was outlined from tidewater on the Delaware to Oswego on Lake Ontario. After passing Harmony, at the bend of the Susquehanna, as in the first route, the Susquehanna was followed to the mouth of the Tioga. Ascending the Tioga to Newtown (Elmira), a portage, which could be changed to navigation by locks by way of Newtown Creek, led to Conedesa Lake through the Seneca on Onondaga River and thence to Oswego.¹

Various plans were indicated for perfecting navigable connections of the Susquehanna with the Schuylkill on the east and the Ohio and the Great Lakes on the west. The first of these outlined, in general, the line, as finally determined upon, of the Pennsylvania Canal system from Philadelphia to Pittsburgh. This followed Tulpehocken Creek to the limit of navigation on the Schuylkill. A canal 4 miles long was planned to connect the latter stream with the Quitapahilla, by passing through which the Susquehanna and the Juniata could be reached. From Huntingdon on the Juniata an upstream navigation of 42 miles brought one to Poplar Run, where a portage of 18 miles connected with the Conemaugh. Obviating this portage by canalization, an easy communication would be secured to Pittsburgh by way of Stony Creek and the Allegheny River. If the navigation of the Allegheny were improved from the point where the above-outlined route entered the river, to Le Boeuf, on French Creek, a short canal only would be needed to complete water communication between Philadelphia and Lake Erie.

As early as 1814 the people of western Pennsylvania, apparently independently of Philadelphia's influence, petitioned the legislature to improve French Creek. This improvement, they believed, would give uninterrupted communication with Quebec and New Orleans, would attract the lucrative trade of the Northwest and make available a cheap supply of salt for the western section, where a dearth was then experienced. The petitioners hoped even to bring in the mineral productions, especially the copper, of the Lake Superior region, and at the same time they appreciated the advantages of a connection with central and western New York.²

¹*Memorial of the Directors of the Chesapeake and Delaware Canal Company to the Legislature of Pennsylvania, 1805, p. 5.*

²*Niles' Register, V, Jan. 22, 1814.*

Two other routes were outlined by which the same connections could be secured by utilizing branches of the Susquehanna and connecting rivers.¹ One of these, utilizing Lake Chautauqua, made southwestern New York tributary to this line of transportation.²

More comprehensive connections with New York were contemplated. Only the removal of obstructions in the otherwise navigable rivers and slight canalization were necessary (it was maintained) to complete an all-water route from Philadelphia to Albany on the Hudson. By the Delaware, Susquehanna, and Tioga Rivers, Seneca Lake was reached; Oneida Lake was gained, from a tributary of which the Mohawk could be reached by a canal only a mile long. When this route was completed, it was asserted that Philadelphia could circumvent New York's attempt to secure the trade of the Genesee country, as Philadelphia would be 101 miles nearer than New York.

During the agitation for through water routes, Philadelphia was actively engaged in perfecting its road connections with Ohio and the West. By 1818 the greater part of the imports of Ohio came from Philadelphia. From a pamphlet published in Baltimore that year an estimate was made that an average of 10 wagons left Philadelphia daily, bound for Pittsburgh. Each was loaded with freight valued at \$200, making a total annual trade of \$730,000.³ Another writer, in 1817, stated that the cost of carriage from Philadelphia to Pittsburgh was \$7 per hundred pounds and that over £300,000 sterling were expended in freight charges annually.⁴ Heavy implements could not pay the cost.⁵

THE SUSQUEHANNA.

The Susquehanna presented such vast trade possibilities that its improvement was advocated from an early date. It connected the Atlantic with the Ohio to the West and with the Great Lakes to the north through its numerous branches and tributaries. Along its borders there was a vast amount of exceedingly valuable timber; large quantities of flour and grain sought an outlet to the seaboard cities; and, as years went on, the value of its iron and coal fields were impressed upon the minds of enterprising individuals. It was the fact that the Susquehanna, through its many branches and tributaries, drained two-thirds of the area of Pennsylvania, rather than the opportunity of

¹*Memorial of the Directors of the Chesapeake and Delaware Canal to the Legislature of Pennsylvania*, 1805, p. 7.

²See Mills, *Inland Navigation*, 48-50, and maps therein.

³New York Canal Commissioners, *Report*, Mar. 7, 1820, in *Public Documents Relating to the New York Canals*, 392.

⁴Birkbeck, *Notes on a Journey in America*, 36.

⁵Birkbeck, *Letters from Illinois*, 98. Land carriage from Philadelphia to Pittsburgh is given as \$7 to \$10 per hundredweight.

forming a connection with the West and the North, that caused Baltimore and Philadelphia much concern. There are no accurate statistics showing the extent of the trade derived from the territory reached by the Susquehanna, but a fairly clear picture of the extent of that trade may be gained from some general accounts.

In 1790, for example, 150,000 bushels of wheat came down the river as far as Middletown, Pennsylvania.¹ In 1814 a resident of Harrisburg saw 86 rafts, 16 arks, and 12 boats pass in one day, and he estimated that this trade kept up for more than 20 days.² From the town of Milton, on the West Branch, 70,000 bushels of wheat descended the Susquehanna during one season (1821), "and judging from the observation of those who live on the river, not less than 500,000 bushels of wheat, besides flour, large quantities of whisky, and other valuable produce, have been sent out of the branches within the same periods."² In 1825 a citizen of Baltimore described the trade of that city with the Susquehanna as follows: 445,000 barrels of flour, 200,000 bushels of grain, 10,000,000 feet of lumber; the total valuation being estimated at \$650,000. Six years later the total trade which descended to tidewater was estimated at \$10,000,000.³

TABLE 31.—Tolls on the Chesapeake and Delaware Canal.

Year.	Canal, to and from Pennsylvania canals via Havre de Grace.	Susquehanna River.	
		To and from Port Deposit.	On timber from Susquehanna River.
1840	\$858.81	\$10,769.72	\$7,138.83
1845	29,499.04	6,561.12	11,240.75
1850	63,041.04	7,196.63	19,443.34
1855	61,740.41	4,558.93	28,834.02
1860	38,519.15	2,048.77	32,523.97
1865	25,145.95	1,119.87	81,524.90
1870	32,916.56	920.16	42,427.86

The significance of the river trade after it came in competition with the canal trade can be more accurately determined. The Chesapeake and Delaware Canal reports classify, in the above table, the tolls derived from the Susquehanna trade. This table shows that the river trade did not decrease, as it might be expected to do at the time of the opening of the Tidewater Canal, which connected Havre de Grace with the extensive Pennsylvania system of internal improvements, but in fact increased, so that between 1860 and 1870 the toll of the Chesapeake and Delaware Canal on goods derived from the river trade actually surpassed the income from the Tidewater

¹*An Historical Account of Canal Navigation in Pennsylvania*, 11.

²Duane, *Observations on the Importance of Improving the Navigation of the River Schuylkill*, 16.

³Hollins, *Views on the Subject of Internal Improvement between the Atlantic and Western States*, 6-8.

Canal trade, reaching its maximum of \$81,524.90 in 1865. No accurate statistics are available showing what portion of the Susquehanna River trade passed to Baltimore instead of Philadelphia, but the general statement is made in the fourth report of the Tidewater Canal Company, that "half of the western produce shipped from Pittsburgh seeks Baltimore for a market."¹ This claim had reference to the produce passing through the Tidewater Canal, and we may safely assume that Baltimore remained in possession of a similar proportion of the river trade.

It is certain that the profits of this trade were eagerly sought by rival tidewater cities. Naturally Philadelphia, the metropolis of the State of Pennsylvania, and for some time the commercial metropolis of the Nation, felt that she was entitled to the trade of a river which drained two-thirds of Pennsylvania. Unfortunately for Philadelphia, this river emptied into the Chesapeake and thus threatened to enrich Baltimore, the principal commercial center of the bay; but, fortunately for Philadelphia, the greatest obstacles to navigation of the Susquehanna began at Middletown, Pennsylvania, and increased from that point to tidewater. Even after many improvements had been made on this part of the Susquehanna (1821) it was admitted by all those who were acquainted with the river and its tributaries that the branches, "even in their unimproved state, admit of an ascending and descending navigation during most parts of the year, while the difficulties of the river commence at Sunbury and increase to such an extent before it discharges itself into the Chesapeake as to render the descending navigation at all times dangerous and to put the ideas of ascending the river, at least from its mouth to Columbia, utterly out of the question."²

The eastern counties of Pennsylvania, and particularly Philadelphia, had been at all times ready to take every advantage of these physical features of the Susquehanna, which tended to keep Maryland from the trade of this river. In 1771 the legislature of Pennsylvania declared the Susquehanna and its tributaries a public highway, with the significant reservation, however:

"That nothing in this act contained shall be deemed to enable the commissioners to clear . . . the River Susquehanna of and from the natural obstructions in the same to the southward of Wright's Ferry."

The significance of this provision was that it sacrificed the interests of the people inhabiting the valley of the Susquehanna for the benefit of Philadelphia. There was a large majority in the State in favor of free navigation, but such legislation as has just been noted was possible because the three original counties of Chester, Bucks, and Philadelphia held a majority of votes in the legislature. After the Revolution

¹Susquehanna and Tidewater Canal Company, *Annual Report*, 1844, pp. 1-4.

²Duane, *Observations on the Importance of Improving the Navigation of the River Schuylkill*, 4.

this kind of legislation was repealed, and the river declared a public highway. Philadelphia was by no means neglected, however. An effort was made to induce Maryland and Delaware to join with Pennsylvania in building a canal between the Chesapeake and Delaware Bays, but they were so indifferent that the plan was abandoned and the Philadelphia merchants began to advocate a connection between the Susquehanna and Philadelphia by means of the Schuylkill and connecting rivers. This plan did not at once prove a success, and the project of a waterway between the Chesapeake and Delaware Bays was again revived. Funds were subscribed by private individuals, and Maryland raised \$50,000 by a lottery. Pennsylvania appropriated \$10,000. Surveys were made and a map was prepared to show the character of the improvements recommended. Everything, however, was dropped in 1803, and no further activity is in evidence until 1821. In this year Maryland authorized subscriptions of \$50,000, to be spent at the rate of \$5,000 per year, and Pennsylvania authorized an annual expenditure of \$10,000.

The large appropriation of Pennsylvania was obtained as a result of the demands made by the counties bordering the Susquehanna and in direct opposition to the interest of Philadelphia. The appropriation, however, was short-lived, for at this very time, when the commissioners were making such favorable reports, Pennsylvania was starting on her vast system of internal improvements, the most important of these being the establishment of a complete connection between Philadelphia and Pittsburgh. The appropriation at once ceased, and notwithstanding the fact that the Chesapeake and Delaware Canal—the value of which was chiefly dependent upon the trade of the Susquehanna which reached tidewater—was being constructed in the years 1824 to 1829, the State seemingly encouraged the construction of dams below Wright's Ferry which interfered with the navigation of the river. The Maryland legislature objected strenuously to these obstructions, and pointed to the fact that Maryland gave her consent to the construction of the Chesapeake and Delaware Canal in 1799 only upon the condition that the Pennsylvania legislature would declare the Susquehanna a public highway below Columbia, which meant that no obstruction to the river navigation should be permitted. Resolutions of protest were adopted by the Maryland legislature and transmitted to the governors of New York, Pennsylvania, and Delaware, and at the same time three commissioners were appointed and instructed to proceed to Harrisburg to seek relief.¹ The commissioners failed to accomplish anything.² Furthermore, the attorney-general of Maryland handed down an opinion two years later (1833) that there was no redress at law, and that the only mode of procedure was to

¹*Niles' Register*, XXIX, 400, Feb. 11, 1826; XL, 47, March 19, 1831.

²*Ibid.*, XL, 129-130, April 23, 1831.

petition the legislature of Pennsylvania for the removal of these obstructions.¹ Nothing more is heard of this controversy, probably because the people of Philadelphia were beginning to realize that free navigation of the Susquehanna was to their great advantage, as the reports of the Chesapeake and Delaware Canal convincingly demonstrated. Even after the completion of the Susquehanna and Tidewater Canal between Wright's Ferry and tidewater in 1839, the river trade in timber and lumber was of growing proportions. In fact, as late as 1865, the tolls realized by the Chesapeake and Delaware Canal from the timber trade of the Susquehanna were more than three times those derived from the traffic descending the Susquehanna and Tidewater Canal.

THE UNION CANAL.

Construction of a complete water communication between the Susquehanna and Philadelphia by means of the Swatara, Quitapahilla, Tulpehocken, and Schuylkill constituted the favorite scheme of the merchants of Philadelphia. This route would deflect the trade of the Susquehanna above the Conewago Falls, thus avoiding the chief obstacle to the navigation of the Susquehanna; at the same time, it would bring to Philadelphia the trade of the East Branch of the Susquehanna and the lakes of New York, that of the West Branch and Lake Erie, and that of the Juniata and the Ohio.

Some of the early attempts in this direction have already been described. Most of them were not successful, and the distrust thus engendered made it difficult to get funds for really feasible undertakings. In 1811 the companies originally organized for the work of internal improvements were reorganized and united under the name of "Union Canal Company." For several years following the act of amalgamation the project lingered in a state of comparative inactivity. At length, however, after encountering various difficulties and discouragements, the canal was completed, and a communication opened in May 1827 between Middletown and Reading. The Union Canal was 77 miles long, exclusive of various pools and navigable feeders. It extended from Middletown, on the Susquehanna, to a point on the Schuylkill a short distance below Reading. At Middletown it connected with the Pennsylvania Canal, leading to Pittsburgh and Erie, to Tioga in the north, and to Bald Eagle Creek on the West Branch of the Susquehanna. At Reading it connected with the works of the Schuylkill Navigation Company, leading to Philadelphia. In the act of 1811 forming the Union Canal Company, the president and managers were specially authorized to extend their canal from Philadelphia to Lake Erie, with the privilege of making such further extensions in any other part of the State as they deemed expedient.

¹ *Niles' Register*, XLIII, 358, Jan. 26, 1833.

In order to resume operations with the prospect of success, large sums of money were needed. The work lingered on for several years after 1811, until helped by the State. By an act passed March 29, 1819, the latter granted an interest of 6 per cent to subscribers of the stock that might be sold to recommence the work. This was to be taken from the proceeds of a lottery. By an additional act of March 26, 1821, the State guaranteed this interest by a pledge to supply any deficiency in it which the lottery could not produce. The new subscriptions which were obtained by this legislative encouragement enabled the managers to resume operations in 1821 and to complete the whole work in 1827.

The report of 1828, issued on November 18, showed that 18,000 tons, paying \$26,000 as toll, had passed through the canal within that year. The trade was hampered at first because there were only 17 boats available and because the outlet locks on the Susquehanna were not finished, which occasioned a short portage between the Susquehanna and the canal throughout the entire season. Trade demands, however, resulted in the construction of 150 boats by private enterprise for the next season's use.¹ Two years later the directors confessed that up to date the Pennsylvania canals had not yielded much to the Union Canal, but "they were gratified by the arrival at the city wharves on the Schuylkill of boats from Lewistown and Mifflin on the Juniata, from Berwick and Danville on the East Branch, and from Milton on the West Branch of the Susquehanna . . . all having passed through the Union Canal, which now forms a complete line of communication between the waters of the Delaware and the Susquehanna."²

Their hopes of great gain from this source, however, were doomed to a speedy disappointment. The Union Canal was smaller than the Pennsylvania canals and the large boats of the former could not enter the latter, making a transshipment necessary. Yet at first the managers tried to convince the stockholders that their narrow boats were preferable and gave as proof the fact that, in 1829, between 50 and 60 boats of this kind were built on the Juniata and Susquehanna.³ By 1837, however, they recognized that their argument in favor of small boats was spurious and acknowledged that the trade was hampered because the Pennsylvania and Schuylkill canals admitted boats carrying from 50 to 60 tons, while the boats of the Union Canal seldom exceeded 25 tons burden.⁴

The only solution of the problem was the enlargement of the canal. They asked the legislature for an appropriation to increase the size of the locks, but their petition was denied and instead the canal commissioners were directed to examine the Union Canal to ascertain the nature of the water-supply. To strengthen public opinion in favor of

¹Union Canal Company, *Annual Report*, 1828, pp. 1-4.

²*Ibid.*, 1830, pp. 1-6.

³*Ibid.*, 1829, p. 5.

⁴*Ibid.*, 1837, p. 5.

enlargement, a convention was held at Harrisburg in 1839. This meeting unanimously indorsed the proposal.¹ In the following year a more convincing argument in favor of the enlargement was offered. This was the year of the opening of the Susquehanna and Tidewater Canal, which had the same dimensions as the Pennsylvania canals. The report of 1841 states:

“The navigation was opened on the 29th of March, but it was soon perceived that without the most vigorous measures the trade would be drawn away by the Tidewater Canal.”²

Tolls were reduced to meet this competition, but without success.

Finally, in 1849, the legislature authorized the company to enlarge the canal from Pine Grove to the Susquehanna.³ In 1851 the enlargement began and upon its completion the company was authorized to enlarge the eastern half from Lebanon to Reading. The work was completed in 1856, but it wrecked the company financially, and within a few years the loan-holders forced a settlement, with the result that the operation of the canal passed into their hands.

In the following decade the reservoir area was enlarged to meet the deficiency of the water-supply for the purpose of increasing the depth of the canal to 6 feet, which would permit the passage of boats with a capacity of 150 tons. These hopes, however, were never realized.

TABLE 32.—*Tonnage and revenue of the Union Canal.*

Year.	Tonnage.	Revenue.	Remarks.
1830	41,094	\$35,133	Tidewater Canal opened.
1835	118,978	135,254	
1840	115,292	110,855	
1841	83,624	66,601	
1845	102,593	60,036	
1850	128,438	76,264	Year after enlargement.
1856	267,307	107,844	
1860	246,871	108,080	
1864	194,100	95,404	
1870	Last report.
1875	.....	.....
1880	29,853	26,996	
1884	16,165	.....

Table 32 shows that the opening of the Tidewater Canal reduced the tonnage of the Union Canal more than one-third in 1841, while the revenue suffered even more, owing to the reduction of the toll. A further reduction of the toll in the following year was still more disastrous financially, although there was a decided gain in the tonnage.

The company realized the maximum tonnage and revenue during the four years immediately following the enlargement, but all the efforts

¹Union Canal Company, *Annual Report*, 1839, pp. 8-9.

²*Ibid.*, 1841, p. 4.

³*Ibid.*, 1849, p. 4.

of loan-holders in the years following failed to place the enterprise upon a paying basis. By 1880 the tonnage had decreased to less than 30,000 tons and 5 years later the canal was abandoned,¹ when the officials of the company reported: "The Union Canal is *non est*, it having been sold out, property and franchise, by the sheriff of Philadelphia." It had borne the brunt of flood and financial panic for almost three-quarters of a century, having been in operation before the canals of the Commonwealth. The work was abandoned and sold for a song, including the masonry of 100 lift-locks, three guard-locks, with buildings, machinery, and pumps, all of which had cost more than \$6,000,000, which melted away from the estates of widows, orphans, and capitalists all over the Commonwealth.²

THE CHESAPEAKE AND DELAWARE CANAL.

The connection of the waters of the Chesapeake and Delaware Bays was to serve two objects: first, to afford protection to our coastwise commerce, especially in time of war; second, to establish a complete water connection between Philadelphia and the Susquehanna.

As early as 1769,³ the American Philosophical Society, "always interested in public-spirited undertakings . . . and particularly those of the Middle States, with which they are most immediately connected," appointed a committee "to view the ground and consider in what manner a water communication might be best opened between the provinces of Maryland and Pennsylvania, and particularly by what means the large and increasing number of frontier settlers, especially those of the Susquehanna and its branches, might be enabled to bring their produce to market at the cheapest rate, whether by land or water." To enable the society to make these surveys and levels, the merchants of Philadelphia subscribed nearly £200. When this committee reported its proposals were rejected, partly because the expense involved was deemed too great, and partly because the route proposed was too far down the Chesapeake to be of sufficient advantage to Philadelphia.

A second committee was appointed with more definite instructions. Its proposals recognized the importance of the Susquehanna trade and met with more favor, but action was suspended on account of the Revolution. The scheme was revived in 1784, owing to the pressing

¹Beginning with the adoption of the Pennsylvania Constitution of 1873, the canal and railroad companies were required to make annual reports to the Secretary of Internal Affairs. These reports show the tonnage and revenue of the companies, and up the nineties they also show the character of the trade.

²Klein, *Canals of Pennsylvania*, p. lxxiv.

³Even as early as 1679-80 we find the advantages of such a canal related in Danker and Sluyter's *Journal of a Tour in Maryland*. The short distance between the navigable parts of Apoquemene and Bohemia Rivers, the former flowing into the Chesapeake and the latter into the Delaware Bay, is referred to. The connection of these two rivers was considered of such great importance that "it might be well to bring it to the attention of higher authorities than particular governors." Quoted in Scharf, *History of Maryland*, II, 523. In the report of the company to Gallatin in 1807 the president of the company states that he has in his possession surveys made as early as 1765. *American State Papers, Miscellaneous*, I, 752-762.

need for better transportation conditions, and the president of the executive council of the State was directed to enter into communication with the governors of Maryland and Delaware.¹ Both States, however, proved unwilling to take the matter up, and Pennsylvania turned her attention to the route wholly within her own limits. The companies organized for the latter purpose, however, became bankrupt in 1795, and in 1799 Pennsylvania again attempted to gain the cooperation of Maryland and Delaware; but though resolutions favoring this were passed by Maryland² in 1799 and Delaware in 1801, subscription books were not opened until 1802.³

A year later a sufficient sum had been subscribed to permit the organization of the company, and a committee was appointed to make plans and surveys. Three routes were presented, all for a lock navigation, and for a canal large enough to admit the bay boats. The route chosen was from Welsh Point on the Elk River to Christiana Creek near Mendenhall's Landing. Subscriptions came slowly. By 1804, the whole sum authorized, \$500,000, had not yet been subscribed, and the directors found that they would need at least \$60,000 more. This was a great contrast to the fortune of the Delaware and Susquehanna Canal of 12 years' previous, when forty times the amount of stock was subscribed within 15 days. Work began in 1804, but went very slowly. Many of the subscribers failed to pay, and collections had to be made through the courts. In 1805 they again appealed to the States for aid. The memorial to Pennsylvania stated:

"The peculiar situation of Pennsylvania above all other States in the Union appears to demand an attention to its inland communication. It contains the most improvable lands, and astonishing quantities of coal, iron, limestone, copper, lead, and other mineral productions, but being altogether an inland State all these advantages are lost for want of communications by means of which the produce of the back country can be brought to market."⁴

They also appealed to the Federal Government, in 1805, setting forth that the construction of the canal was pivotal in the coastwise trade, and urged that for this reason the canal had a claim on the

¹Pennsylvania, *Archives*, 4th series, IV, 36.

²Although this act passed the Maryland legislature by a large majority, there were many who doubted the wisdom of this action. A well-wisher of Baltimore urged the defeat of the bill for the following reasons: "From the great superiority of situation, and expense of the portage across the isthmus between the Chesapeake and Delaware Bays, Baltimore, though much inferior to Philadelphia in wealth and population, hath of late commenced a degree of rivalry with that city. Remove the carrier, all connection is immediately terminated. She at once sinks into the station of an inferior or secondary market I consider that Philadelphia and Baltimore alone are deeply interested in the issue of this business, and that it will be superior management of an enterprising politic state to conduct the Chesapeake trade into the Delaware Bay, and consequently terminate in the destruction of Baltimore as an independent and valuable market." *Reflections on the Proposition to Communicate by a Navigable Canal, the Waters of the Chesapeake with those of Delaware Bay*, 15, 16.

³Pennsylvania, *Session Laws*, 1799, April 11, chap. ccxxii, 478-479; Maryland, *Laws* (ed. Kilty) 1799, Dec. 7, chap. xvi; Delaware, *Session Laws*, 1801, Jan. 29, chap. lxxxviii, 170-188.

⁴*Memorial of the Directors of the Chesapeake and Delaware Canal Company to the Legislature of Pennsylvania*, 1805, pp. 1-7.

Federal Government. Attention was called to the growth of manufacture in minerals in England. This was said to be possible because of the system of canals which brought the coal and iron together at a cheap rate, whereas in the United States the coal and iron mines might exist within 10 miles of each other and yet remain valueless because of the expense of transportation.¹

Arguments like these ought to have appealed to the legislature of Pennsylvania, for this State had been working iron mines for local uses for some time, while the coal-fields of the same State were beginning to attract attention. But nothing was done beyond the passing of a resolution by the House in favor of the subscription of an indefinite number of shares by the State, while in Maryland a bill authorizing the treasurer to subscribe 100 shares failed to pass.²

No better success was had with the United States. The Government had little money to spend, for it was during the period of the troubles with France, and besides there were three other projects claiming aid. A bill was introduced in Congress in aid of the canal in 1816, but was defeated. Even a resolution asking for information as to the probable expense was not allowed to come to a vote when introduced the next year. Gallatin's report of 1808 recommended that aid should be granted to the canal along with other schemes for improvement, but the bills for this purpose, introduced into both houses in 1810, were lost. The project then practically lapsed until 1824, when a bill was approved by President Monroe, appropriating \$30,000 for surveys and estimates of roads and canals.

Meanwhile, in 1822, the Chesapeake and Delaware Canal Company had been revived, and the new board of directors had made a new survey, which resulted in a minimum cost estimate of \$1,239,159. Benjamin Wright, chief engineer of the New York canals, was employed as permanent engineer of the company. Again the appeal was made to Pennsylvania, showing the importance which the Susquehanna trade still had in these men's eyes. By this time, however, Pennsylvania had come to a full realization that New York threatened her commerce with the West, and, although this was the very time when she was contemplating many other schemes for internal improvement, \$100,000 of the State funds were subscribed for this canal. To this sum the State of Maryland added \$50,000, Delaware, \$25,000, and the National Government the liberal sum of \$300,000. Private contributions were not far in the rear, for, by June 4, 1824, \$425,000 had been received in new subscriptions. Five dollars was levied on all old stockholders to ascertain how many desired to re-enter, and it was estimated that \$100,000 would be derived from this source, making a sum total of

¹*Memorial and Petition of the President and Directors of the Chesapeake and Delaware Canal Company to Congress*, 1805, pp. 3-5.

²*Chesapeake and Delaware Canal Company, Annual Report*, 1806, pp. 6, 7.

\$1,000,000. As a result of this varied and liberal support, the directors had the gratification to report 6 years later (1830):

"The great and important work in which the interests of the stockholders and the feelings of the community have been so deeply interested, and which by many was considered a desperate and hopeless enterprise, has, by 6 years of anxious toil and steady perseverance, been completed, and now exhibits a bright prospect of usefulness to the community and revenue to the proprietors."¹

For a period of 40 years the directors furnish in their annual reports a detailed statement of the character and source of the trade of the canal. After 1870, when the traffic was on the decline, the reports become more meager every year, so that at the present time the bare statement of the total tonnage, expense, and revenue is all that is reported.

TABLE 33.—*Traffic of the Chesapeake and Delaware Canal.*²

Year.	Total tonnage.	No. of passages.	Lumber.	Timber.	Grain.	Flour.	Coal.
			<i>sq. ft.</i>	<i>cu. ft.</i>	<i>bushels.</i>	<i>barrels.</i>	<i>tons.</i>
1830	61,500	2,379	.....	.....	.....	.....	.....
1835	91,600	4,889	18,143,000	.....	130,610	15,350	.....
1840	112,430	4,363	11,336,200	1,454,450	316,016	22,223	13,305
1845	195,040	8,778	25,886,400	1,125,000	957,915	62,491	17,625
1850	361,640	12,912	44,795,300	2,145,000	1,826,476	113,883	53,693
1855	536,970	14,391	62,261,590	2,930,130	1,470,337	115,825	177,524
1860	623,150	12,710	58,882,882	3,142,530	1,645,589	147,630	193,404
1865	916,973	12,811	33,597,000	7,037,060	866,409	167,850	360,781
1870	1,245,928	15,650	86,527,781	4,697,965	870,154	366,756	581,097

Year.	Iron.	Lime.	Lime.	Groceries.	Dry goods.	Oysters.
	<i>tons.</i>	<i>bushels.</i>	<i>tons.</i>	<i>pounds.</i>	<i>pounds.</i>	<i>tons.</i>
1830	.....	.....	.....	.....	.....	.....
1835	.....	.....	.....	.....	.....	3,886
1840	2,109	101,116	.....	624,300	.....	4,740
1845	14,838	94,734	.....	16,578,368	15,568,715	7,839
1850	30,273	299,700	5,468	32,102,555	23,644,551	10,344
1855	36,036	397,805	6,191	37,846,732	14,276,988	9,103
1860	37,230	344,839	14,596	43,071,816	31,302,765	16,668
1865	26,000	121,753	5,553	67,419,400	14,671,500	21,620
1870	68,924	114,654	3,282	172,555,500	18,885,700	14,025

Table 33 shows that during the first two decades (1830-1850), the traffic was composed principally of timber, lumber, grain, and flour, while wood, oysters, fish, and merchandise constituted important items from the beginning. None of these items shows any marked increase in the following two decades (1850-1870), although there was great advance in their production. This was due to the fact that at this early period the railroads were becoming active competitors for this

¹Chesapeake and Delaware Canal Company, *Annual Report*, 1830, p. 7.

²Compiled from the annual reports of the Chesapeake and Delaware Canal Company for the years quoted.

trade. There was, however, a great advance in the total tonnage during this time, due to the great increase in the coal traffic. In 1840 only 13,305 tons of coal were carried through the canal, whereas in 1870 the coal traffic had increased to 581,097 tons.

Between 1830 and 1860 the total Susquehanna traffic furnished between one-half and one-fourth of the revenue of the company. During the same period it equaled the revenue derived from the traffic passing to and from the centers of trade along the Chesapeake Bay. In the following decade, however, the trade to and from Baltimore went ahead by leaps and bounds. This was due to the great advance in the shipment of coal between Philadelphia and Baltimore. Most of the bituminous coal was derived from the Cumberland fields. It reached Baltimore over the Baltimore and Ohio Railroad and was then shipped to the North by way of the Chesapeake and Delaware Canal. Likewise the anthracite coal of the Pennsylvania mines was shipped to the South through the same canal.

The later history of this canal may be briefly summarized. When the period in the decline in the traffic set in, the managers started a movement to again arouse the interest of the National Government in the plan of constructing a ship-canal. This movement began in 1871, when the National Commercial Convention memorialized Congress on this subject. The Government's engineers were instructed to examine routes and make estimates of the cost. The results were published in the Annual Report of the Chief of Engineers for 1872. In the same year, Maryland chartered the Maryland and Delaware Ship Canal Company. This company claimed the right of way of the Sassafras route from Kennedy's Mills at the headwaters of the Sassafras River to the Delaware River near Liston's Point, and has since been a rival of the interests of the old canal in presenting to the General Government its superiority as a ship-canal route.

The river and harbor bill of 1878 directed the survey of all the routes which a ship-canal was likely to follow. The engineers were directed to base their recommendations upon a canal 178 feet wide at low water and 100 feet wide 26 feet below mean water. The locks were to be 600 feet long and 40 feet wide. Three routes were reported, which were designated as the northern, intermediate, and southern. The northern route followed the Sassafras River already mentioned; the intermediate route entered Chesapeake Bay at the Chester River and Delaware Bay at the Broadkill River, and the southern route made use of the Choptank River, Ferry Creek, Nanticoke River, and Broadkill River. The primary purpose of these proposals was to furnish Baltimore with a shorter route to the sea, and hence the utilization for that purpose of the Chesapeake and Delaware Canal, which follows the most northerly route, was not even considered. In 1882 provision was again made for similar surveys, with the same end in view; but in this

case, as in the former survey, nothing further materialized than favorable engineer's reports.

It was not until the survey of 1894, made under the direction of L. Case as chief engineer, that the claims of the Chesapeake and Delaware Canal met with favor. This report lays emphasis upon the coast-wise trade as against the claim of Baltimore for a direct outlet to the sea, and concludes that for this purpose the most northerly route is the most desirable. Twelve years later (1906) Congress authorized the appointment of a special commission, which was instructed "to examine and appraise the value of the works and the franchises of the Chesapeake and Delaware Canal . . . with reference to the desirability of purchasing the said canal by the United States, and the construction over the route of the said canal of a free and open waterway having a depth and capacity sufficient to accommodate the largest vessels afloat at mean low water," and also to make an estimate of the cost of the same from the surveys heretofore made under the direction of the War Department. Of all the routes formerly surveyed, the Sassafra route alone was to be considered by the commission. Their conclusions with regard to the advantages of the two were to be based upon commercial and military considerations. The commission came to the following conclusions:

(1) No more than \$2,514,289.70 should be paid for the property of the Chesapeake and Delaware canal, except certain outside holdings, which have been deducted.

(2) They consider the purchase of the present route to be desirable and the construction of a free ship-canal over this route to be justified by the demands of commerce and by military and naval considerations.

(3) They find the Sassafra route entirely feasible, but more costly than the Chesapeake and Delaware Canal route.

(4) They estimate the probable cost of the Sassafra route to be \$23,071,864, and the Chesapeake and Delaware Canal route \$21,143,470.

Therefore, from the standpoint of expense, and also because the older route possessed slight military advantages, the commissioners recommended the purchase of the Chesapeake and Delaware Canal by the United States for the purpose of constructing a free ship-canal.

THE SUSQUEHANNA AND TIDEWATER CANAL.

In 1783 Maryland had granted a charter to a canal company for a waterway from the Susquehanna at a point just below the State line, at Port Deposit, at the head of tidewater on the Chesapeake. The company, composed of prominent citizens of Maryland, promised to build the canal complete in 7 years for the sum of £20,000. By 1801 the stock had increased to £80,000, and the canal needed £40,000 to finish it.¹ It was proposed in 1802 that the canal should be jointly

¹*Cf. Maryland. Laws* (ed. by Kilty), at various periods from 1783 to 1805.

owned by the two States most concerned, but this was not accepted and the States worked at cross-purposes for more than 30 years, when the property, after a forced sale on a mortgage in 1817, passed into the hands of a few individuals.

In 1822 a company of Baltimore merchants interested in the old scheme of water communication from the Susquehanna went to New York to see the engineers of the Erie Canal. On their return they made a trip which showed the possibilities of inland water-routes from Baltimore to the rich and rapidly growing Western New York country. They entered Cayuga Lake from the old canals connecting the Erie with the Finger Lakes, and going up the lake to its head at Ithaca, made a short land trip to Owego on the East Branch of the Susquehanna (two points soon to be joined by the Ithaca and Owego, one of the earliest railroads built) and from Owego to Harrisburg in an open flat-bottomed boat. From this point they went to Baltimore by land. The latter city was very anxious for a continuous route, both because of its desire for a cheap means of transportation of coal and iron (it cost more per ton to bring coal to Baltimore by wagon than to ship the same amount to Europe), and because of the strong probability that the Chesapeake and Delaware Canal would soon be completed, and the river trade thereby be deflected from Baltimore to Philadelphia at Havre de Grace. The agitation continued, and in 1825 a convention was called to consider the policy of the State towards internal improvements, but save that Baltimore should be protected and that the Chesapeake and Ohio Canal should be left to the National Government, they were unable to agree on anything.¹ They wanted above all to secure the connection of Baltimore with the coal-fields of the Allegheny Mountains and with the densely settled regions that lay between.

Had it not been for the completion of the Cheapeake and Delaware Canal, which now assured Philadelphia a large proportion of the trade of the proposed canal, it is doubtful whether Pennsylvania would have granted the privilege. The building of this canal meant the tapping between Philadelphia and Pittsburgh of the Pennsylvania system of internal improvements, completed in 1833. It meant also a connection with the lakes of New York; and this was the undisguised purpose of the merchants of Baltimore. Two years before the incorporation of the Susquehanna Canal Company from Philadelphia, the Pennsylvania legislature, under pressure from the western counties, granted

¹One member of the convention gave the following comparison of the cost of transporting 1 ton for 1 mile over a turnpike and over a canal: (a) Turnpike transportation: 20 miles a day's travel; 2 tons per wagon will require the services of 6 horses and 1 man; 6 horses at 75 cents a day equals \$4.50; 1 man at 75 cents a day equals \$0.75; total \$5.25. Hence 1 ton can be carried for 1 mile for 13 $\frac{1}{8}$ cents. (b) Canal transportation: 20 miles a day's travel; 25 tons per boat which requires 1 horse, 1 man, and 1 boy; services of horse, 75 cents a day; man, 75 cents a day; total cost of 25 tons for 20 miles is \$2; cost of 1 ton for 1 mile is $\frac{2}{5}$ of a cent, which is only one thirty-third of the cost of wagon transportation.

the right to continue the construction of the Baltimore and Susquehanna Railroad from the Maryland line to York, Pennsylvania.¹ The advocates of the railroad pointed out that the connection between Philadelphia and the West would become dangerous to Baltimore only upon the condition that:

"We permit their schemes to be matured, and the current of trade to take a settled direction in the channels provided for it by our rivals—for commerce, like water, will seek its level, depending on natural or artificial causes, and if we once permit it to be diverted from its natural channel, it will be found most difficult to bring it back. If, on the other hand, we enter early into the field of competition and improve our natural advantages, we make the efforts of our rivals tributary to our views, and they can not make a foot of canal or railway, erect a bridge, or pave a turnpike road, which does not necessarily lead the trade or commerce embarked upon it directly to our own door. We have nothing to do in fact but to take up the work where they leave it, and to finish at a trifling expense a great line of internal communication which the exertions of our spirited and enterprising neighbors have conducted within our reach. The whole trade then of the country referred to, New York, Pennsylvania, and the West, seeks its outlet in the valley of the Susquehanna, and pursuing the artificial channel provided for it terminates at the end of the eastern section of the Pennsylvania Canal at Middletown, at which point the competition for its possession between Baltimore and Philadelphia must commence."²

The authorization of the construction of the Susquehanna Canal to Columbia therefore meant the establishment of two proposed avenues within two years which were to be constructed for the purpose of turning towards a rival city the trade from Pittsburgh to Philadelphia. Pennsylvania therefore put a clause into the Susquehanna Canal Act authorizing it to request from Maryland the privilege of connecting the Susquehanna Canal with Chesapeake Bay, provided that Maryland should limit the tolls to the rate specified by Pennsylvania.³ Maryland was certainly the gainer in this interchange of privileges and the directors of the Baltimore and Ohio recommended that this privilege be granted, for they believed in the principle that trade should be allowed to follow the natural avenue and that produce should have a choice of markets.

Thus a struggle of more than half a century ended, and within less than 5 years the canal between Columbia and Tidewater was completed. But it was not constructed along the east bank of the Susque-

¹*Niles' Register*, XLII, 81, March 31, 1832. The Baltimore and Susquehanna Railroad was incorporated by the legislature of Maryland on February 13, 1827, and 5 years elapsed before the legislature of Pennsylvania granted authority to extend it to York, Pennsylvania. During these 5 years the interests of Philadelphia and the counties which benefited most by the proposed extension battled for supremacy. Members from Philadelphia declared that "such a right will prove the funeral knell of our city," whereas the members favoring the right declared: "We solemnly protest against the restrictive policy that will enable the city of Philadelphia to command that the trade of the Susquehanna country to seek an outlet in the market of the Chesapeake by way of Philadelphia and the cross-cut canal (Chesapeake and Delaware Canal) for the purpose of enriching her merchants at the expense of the farmers of the interior." *Preamble and Resolution offered by Mr. Logan relative to the Baltimore and Susquehanna Railroad*, 3-10; Poulson, *American Daily Advertiser*, March 25, 27, 1830.

²*Report on the Proceedings in Relation to a Railroad from Baltimore to the Susquehanna*, 4-5.

³Pennsylvania, *Session Laws*, April 15, 1835, No. 164, pp. 306-315.

hanna, as the law of 1835 directed. The company planned to make use of the old Maryland Canal between Love Island and Port Deposit. They entered into correspondence with the proprietors of the old canal, but found them so unreasonable in their demands¹ that the company petitioned the Pennsylvania legislature for the privilege of building the canal along the west bank of the Susquehanna. Their petition was granted in the following year,² but Maryland agreed to its extension below the Maryland line only upon the condition that the Susquehanna Company would value the property of the Maryland Canal at \$2,000 per share by granting the proprietors, on the completion of the proposed canal, a number of shares which would equal the above valuation. Since this was \$3,000 less per share than the original demands of the Maryland proprietors, and according to the engineers the west bank was on the whole preferable, this condition was at once accepted. The construction of the canal now proceeded with wonderful rapidity, and in 1840 this avenue was formally opened, after the expenditure of \$3,500,000.

The trade which followed the canal at once fulfilled the most sanguine expectations. Four years after the opening of the canal the managers reported that nearly "half of the Western produce shipped from Pittsburgh seeks Baltimore for a market . . . and about a third of the merchandise shipped through the Pennsylvania Canal for the West is also forwarded by this city."³ A vast proportion of the other half of the Pennsylvania Canal trade from Pittsburgh and regions adjacent to the canal went to Philadelphia by way of the Susquehanna Canal and the Chesapeake and Delaware. For a period of 20 years (1840 to 1860) the trade to and from Havre de Grace passing through the latter canal produced more than one-fourth of the revenue. Before the completion of the Susquehanna Canal this trade passed through the Union Canal and over the Columbia and Philadelphia Railroad. The Union Canal was not even able to compete for the produce destined for Philadelphia, since it meant a transshipment at Middletown, owing to the fact that the Union Canal was too small to admit the boats of the Pennsylvania Canals. A similar transshipment was necessary at Columbia to the railroad, and this, together with the increased expense of railroad transportation, threatened to rob Pennsylvania of the realization of her system, which was to establish a complete connection between Pittsburgh and Philadelphia. The railroad sought relief through legislative enactment. A law was passed permitting a drawback of 75 cents per ton on most of the articles of western produce shipped from Pittsburgh in case it was sent to Philadelphia over the entire line of the Pennsylvania works. This system of rebates, however, appears to have been of short duration, since only the report of the managers of the Susquehanna Canal (in 1844) makes mention of it.

¹*Susquehanna Canal to Tide*, 1-16.

²Pennsylvania, *Session Laws*, No. 49, March 21, 1836, pp. 134-146.

³Susquehanna and Tidewater Canal Company, *Annual Report*, 1844, pp. 1-4.

Table 34 shows to the extent that data are available the trade of the Susquehanna and Tidewater Canal in certain years during the period 1845-1895. During the first half of this period trade increased, and during the last half declined rapidly. The company's reports furnish in detail the reasons of this decline and describe the attempts made to avert it.¹

TABLE 34.

Year.	Traffic.						Boats cleared.	Tolls.
	Grain.	Flour.	Lumber.	Timber.	Coal.	Iron.		
	<i>bushels.</i>	<i>barrels.</i>	<i>sq. ft.</i>	<i>cu. ft.</i>	<i>tons.</i>	<i>tons.</i>		
1845	983,260	90,127	41,949,162	72,889	70,124	28,124	4,461	\$99,683.89
1850	1,241,458	108,227	63,081,641	24,076	127,290	45,718	6,169	156,965.05
1855	633,230	20,981	108,369,045	587,196	232,865	37,114	7,859	211,141.26
1860	550,577	8,775	111,780,400	9,978	229,292	92,023	6,157	146,152.20
1864	.....	.....	.....	.....	.....	20,194	5,757	278,344.48
	<i>tons.</i>		<i>tons.</i>					
1875	22,450	.....	66,719	.....	290,297	21,572	.....	95,839.79
1880	19,589	.....	31,203	.....	275,785	15,716	.....	53,630.77
1885	4,328	.....	11,182	.....	306,205	250	.....	57,500.83
1890	.....	.....	.....	.....	.....	.....	.....	8,865.57
1895	.....	.....	.....	.....	.....	.....	.....	2,956.54

The managers anticipated this decline 10 years before it actually took place. In their report of 1861 they quote from the Pennsylvania Railroad report of the same year to the effect that the recent completion of parallel railroads to the Pennsylvania canals had introduced a "serious competitor" for the lumber and coal traffic.² Three years later they state that "it was mainly owing to the increasing power of locomotive engines for the traction of great loads, at moderate velocities, that the railroad has manifested its capacity for usefulness and taken the lead of the canals."³ To prevent this dreaded result, the canals must cheapen transportation. The managers urged that the locks be enlarged so as to admit boats of greater tonnage. Furthermore, they advocated the construction of double boats upon the plan of "Mr. McCreary's experiment." Both sections of this boat were equal in capacity to the largest class of single boats and were moved at a slightly increased expense over the cost of operating a single boat of ordinary size.⁴

Of still greater significance is the experiment relative to the introduction of steam canal-boats. The report of 1861 states that:

"The steam canal-boat, *J. Edgar Thompson*, became the pioneer and has been making successful trips from the day that it was launched, fully realizing anticipated advantages. . . . This boat has a freightage capacity of 75 tons, is furnished with an engine of some 20 horsepower, has an upright boiler

¹Compiled from Susquehanna and Tidewater Canal Company, *Annual Reports*.

²Susquehanna and Tidewater Canal Company, *Annual Report*, 1861, p. 7.

³*Ibid.*, 1864, p. 5.

⁴*Ibid.*, 1861, p. 6.

of 109 tubes, a propelling wheel of 45 inches diameter, and tows easily another boat carrying 112 net tons. The propelling power being employed in the axis of the canal-boat, the movements of the steamer are executed with more regularity and certainty than the ordinary towage with horses."¹

A boat of similar construction and capacity was already completed. The managers concluded that the successful introduction of steam as a motive power "must inaugurate a new era in the history of our canals, and from thence we may date a future of continued prosperity, as in that case it will be useless waste of means on part of the railroad companies controlling parallel lines to carry on a competition for the through coal trade."²

The Susquehanna Company operated for some time the tow steam-boats mentioned, but notwithstanding their optimism, the railroads continued to encroach and their revenue declined steadily. In the short interval between 1864 and 1875 the revenue fell from \$278,344.48 to \$95,839.79. The canal was leased by the Reading Railroad in 1871, and henceforth no effort was made toward substantial improvement. In 1890 the receipts were less than \$10,000, and 5 years later the canal was operated at an actual loss, which led to its immediate abandonment. After the adoption of Pennsylvania Constitution of 1873 the canal and railroad reports were made to the Secretary of Internal Affairs.

THE DELAWARE AND RARITAN CANAL.

On December 1, 1804, almost three decades before the final incorporation of the Delaware and Raritan Canal Company, the New Jersey Navigation Company was chartered for the purpose of opening a communication by water between tidewater of the Delaware and Raritan Rivers.³ This action was taken by the New Jersey legislature just after the organization of the Chesapeake and Delaware Canal Company and at the time when the latter company was preparing an appeal for Federal aid upon the ground that it proposed to construct the central link of a water communication between the St. Lawrence and the Carolinas. No surveys of the proposed route had preceded the incorporation. An estimate of the cost was therefore impossible, and the act does not mention the stock necessary for organization, whereas the tolls were to be what the "said directors shall deem proper."

The persons named in the charter were directed to meet 30 days after the passage of the act and at said meeting elect 5 directors for one year and appoint persons to open subscription books. A very general

¹Susquehanna and Tidewater Canal Company, *Annual Report*, 1861, p. 5.

²*Ibid.*, 6.

³New Jersey, *Session Laws*, Dec. 1, 1804, chap. cliii, 433-449. The company was given the right of eminent domain in the use of the waters of the Assanpink, Stonybrook, Millstone, and Raritan Rivers. They were authorized to deepen and widen natural beds, straighten courses, and to open one or more navigable canals to connect streams.

survey of the proposed route under the direction of the company resulted in the recommendation of two plans: (1) the use of the riverbeds, and (2) the construction of a canal along the banks of the rivers.¹ Beyond this, nothing appears to have been accomplished until after the War of 1812. An act was passed for the purpose of making the preliminary surveys for a canal to connect the tidewaters of the Delaware with the Raritan in 1816. Three commissioners were appointed. They rejected both the previous plans as impossible, and recommended a canal on a dead level, with locks only at the entrances on the two rivers at tidewater. This their engineer considered the most feasible. They also planned for a canal whose dimensions should not interfere with traffic from other canals, but which should rather "be applicable to national purposes, and which may form a link in the chain of inland navigation from Massachusetts to Georgia."²

These recommendations were incorporated in an act passed in 1820, but again the scheme lapsed, and 3 years later a third commission was appointed, which approved of the route of the second commission, but not its plans as to dimensions, preferring a smaller canal, which would admit boats of 50 to 75 tons.³ These, they claimed, were as large as any used on the canals to the north or south of them. The estimate of cost was little less than that of the larger cut. These commissioners also made an interesting estimate of the trade which the canal might expect, derived from the 58,000 tons sent annually between New York and Philadelphia, of which it was assumed that the great bulk would seek the canal, from the southern coastwise trade, and from the coal trade of the Lehigh Valley. From all these sources they estimated a revenue of \$105,000 per year. There were some delays, however, over obtaining the cooperation of Pennsylvania and other causes which the records do not reveal, so that work ceased, and by March 1828 the company had passed out of existence.

On February 4, 1830, the fifth and last general act for the construction of a canal between the Delaware and Raritan was passed.⁴ The only peculiar feature of this act was the provision for a transit duty receivable by the State of 8 cents per passenger and per ton of "superior merchandise," and 2 cents per ton of "inferior merchandise." This company also met with many mishaps. It did not find subscribers to its stock readily, and on account of the transit duty no aid was to be expected from the National Government.

New Jersey then attempted to strengthen the company by extending the charter privileges from 30 years to 50 years, but even that failed to revive confidence. The managers concluded that confidence had shifted from canals to railroads, and requested the legislature to grant

¹New Jersey, *Report of the Commissioners of New Jersey upon the Subject of a Canal from the Delaware to the Raritan*, 1816, pp. 1-8.

²*Ibid.*, 20.

³*Ibid.*, 1824, pp. 1-4.

⁴New Jersey, *Session Laws*, Feb. 4, 1830, pp. 78-83.

them authority to construct a railroad between Trenton and New Brunswick, but this request was denied on the ground that such authority would violate a tacit understanding with the Camden and Amboy Railroad Company, which had been chartered on the same day as the canal. A plan was then proposed and carried out consolidating the two companies, and approved by the legislature February 18, 1837. By this scheme both companies retained their own officers, but were as one in the matter of investments and revenue. Under this arrangement construction proceeded rapidly, so that both the canal and the feeder from the Delaware were completed in January 1838.

No other canal possessed such advantages as this one. It formed a link in the great coastwise system. It commanded the trade between the two great commercial centers, New York and Philadelphia. It was connected with the trade of the West by means of the Hudson River and the Erie Canal; and lastly, it afforded unsurpassed facilities for the transportation of coal from the fields of Pennsylvania. Naturally, the people both in New Jersey and outside of the State were interested in this canal. Unfortunately, two conditions stirred up great public opposition to the joint companies, which finally culminated in the legislative investigation of 1849. These conditions were the monopoly privileges granted to the canal and railroad companies by the legislature of New Jersey and the management of the companies.

Nature guarded against the construction of a competing canal and the railroad charters prevented the construction of a competing railroad. It was for certain considerations that the State granted these privileges. The railroad, like the canal, paid a duty to the State for the transportation of every passenger and every ton of merchandise. The act of incorporation, however, provided that the payment of this duty was to cease in case the New Jersey legislature authorized the construction of a railroad which should commence and terminate within 3 miles of the commencement and termination of the railroad.¹ One year later the State made a bid for still greater interest in return for some more monopoly privileges. The act of February 4, 1831, made it lawful for the Camden and Amboy Railroad to transfer to the State 1,000 shares of the company, with authority on part of the State to appoint one director to represent these shares; but these shares were to be returned to the company "whenever other railroads or roads for the transportation of passengers and property between Philadelphia and New York across the State shall be constructed and used for that purpose under and by virtue of a law of this State or of the United States."² All this was done before the consolidation of the canal and railroad. Shortly after their consolidation, the State made it lawful to transfer another 1,000 shares out of the joint company's funds, with an additional State director to represent these shares, and

¹New Jersey, *Session Laws*, Feb. 4, 1830, sec. 24, p. 91. ²*Ibid.*, Feb. 4, 1831, sec. 6, p. 75.

in return the State offered the following complete and unconditional monopoly of trade between Philadelphia and New York City:

"That it shall not be lawful at any time during the said railroad charter to construct any other railroad or roads in this State without the consent of the said companies which shall be intended or used for the transportation of passengers or merchandise between the cities of New York and Philadelphia."¹

Of course, the companies transferred the stock to the State in return for a monopoly of the extensive trade between the two leading commercial centers. Apparently without any complaint, they guaranteed to the State an annual minimum return of transit duties of \$30,000, beginning with the date of incorporation. But the constitutionality of these privileges was at once questioned upon two points. It was claimed, on the one hand, that the constitution of New Jersey did not grant the legislature authority to enact such privileges, and, on the other hand, that these privileges were in violation of the Federal Constitution, in that they violated the provisions relating to interstate commerce. The governor silenced the first claim by issuing a statement, backed by opinions of counsel, that the granting of these privileges was an implied power of the legislature.² Similar theories, however, might have brought the companies into trouble with the National Government upon the second plea of unconstitutionality. But the days of Marshall were at an end and the strict-construction theory was gaining ground.

In all probability, opposition would have ceased with the settlement of the constitutional questions had it not been for the lax methods adopted by the company in issuing its reports and the pursuance of methods of transportation, which still further aggravated the monopoly evil.³ The Delaware and Raritan Canal Company issued their first report in 1831, which set forth the reasons for consolidation with the railroad.⁴ After this the united companies did not make a report to the stockholders until 1840,⁵ the year after the completion of the canal and railroad. In the report of the year following (1841) they frankly admitted that it had not been customary for the joint board of directors to make reports to the stockholders, but that the general depreciation in all kinds of properties induced them to depart from this general rule, in order that the stockholders might determine for themselves the value of their securities in the canal.⁶ Three meager reports were issued during the following three years. These reports were attacked upon the ground that they were inaccurate and that the State was

¹New Jersey, *Session Laws*, March 2, 1832, sec. 2, p. 80.

²Delaware and Raritan Canal Company, *Opinions of Counsel on the Rights Vested in the Delaware & Raritan Canal and Camden & Amboy Railroad and Transportation Companies, by the Acts of the State of New Jersey, passed in relation to them.*

³See Carey, *Beauties of the Monopoly System in New Jersey.*

⁴Delaware and Raritan Canal Company, *Annual Report*, 1831.

⁵Delaware and Raritan Canal Company, *Report of the Joint Board of Directors to the Stockholders*, 1840.

⁶*Ibid.*, 1841.

defrauded of a portion of the transit duties. In answer to these charges, the joint companies appointed a special committee of investigation, which reported to the legislature in December 1848.¹ At the same time the legislature demanded special reports from the State directors, with reference to the charges made. Two reports were presented to the legislature, one in 1848, the other in 1849.² But none of these investigations proved satisfactory, and as a result the legislature appointed a special committee of investigation in 1849.

Although this committee found the companies guilty of the pursuance of a method "exceptional in its principle, defective in its details, and uncertain in its results," they nevertheless cleared the company of the charge that these methods had resulted in defrauding the State of its just income.³ They claimed that the failure to report 1,019 trips through the canal between 1840 and 1849 was due to the laxness of the "subordinate officers" of the company.⁴ But the committee found that, owing to the instructions of directors to these officers to be liberal in their returns to the State, the amount turned over to the State was slightly in excess of the amount to which the State was entitled.

The committee, however, severely censured the company for granting monopolies of transportation rights to certain companies which excluded individuals almost entirely from embarking in the transportation of superior merchandise. Within the 10 years just preceding the legislative investigation, the joint companies had granted special contracts to 10 companies, and all but one of these had a special rate. The Merchants and Swiftsure line, trading between Philadelphia and New York, paid the joint companies 25 per cent of their entire charge between the two cities.

In 1839 the Albany Union Line was given a monopoly of the use of the canal on coal shipped from Philadelphia to Albany in return for one-sixth of their entire charge, and later the same company received similar privileges on coal shipped to Bridgeport, Connecticut, in return for one-fourth of their charges for the entire distance. More favorable terms, however, were necessary to encourage the coal trade with Albany, and in 1845 this company was superseded by the Iron Steam Packet Company, which received a monopoly of that trade at the rate of 10 per cent of their entire charges on superior merchandise and 7½ per cent on inferior merchandise. Even these rates did not appear to encourage the transportation of coal up the Hudson in large quantities, and a still more favorable monopoly was granted 3 years later to the Commercial Transportation Company. This company was allowed shipments through the canal at the rate of 5 per cent of the entire

¹Delaware and Raritan Canal, etc., New Jersey, *Report of Joint Companies*, 1849.

²Delaware and Raritan Canals, etc., New Jersey, *Reports of the New Jersey State Directors*, submitted in January of 1847 and 1848.

³Delaware and Raritan Canals, etc., New Jersey, *Report of the Commissioners appointed to Investigate Charges made against the Directors of the Delaware and Raritan Canal and Camden and Amboy Railroad and Transportation Companies*, 1850, pp. 34-35.

⁴*Ibid.*, pp. 14-21, 30.

charge for coal and 15 per cent for all other merchandise. Similar arrangements were made with Schriver & Company, of Baltimore, to encourage trade between Baltimore and New York, by which the Chesapeake and Delaware Canal received 6 per cent of the charge for the entire distance and the Delaware and Raritan Canal 9 per cent.¹

This does not exhaust the list of monopoly grants, but it shows to what extent the transportation of merchandise through the canal was in the hands of special companies which, according to the report of commissioners, who were inclined to be lenient in their criticism, excluded individuals from embarking in transportation. It must be remembered that the joint companies did not possess much floating stock. It consisted of 21 available steamboats, of which 12 were ferry-boats, 4 were passenger boats, 3 were freight boats, and 12 were used for steam towing. In addition to these, there were 2 large freight barges, about 50 schooners and coal barges, and about 60 Mauch Chunk coal boats.² As this floating stock was in no wise equal to the trade passing through the canal, the welfare of producers depended upon active competition between individual and corporate owners of floating stock. This competition the policy of the company had thwarted.

TABLE 35.—*Canal and railroad traffic between 1835 and 1848, not including way freight not liable to duty.*³

Year.	Superior merchandise.		Inferior merchandise.		Number of passengers.	
	Canal.	Railroad.	Canal.	Railroad.	Canal.	Railroad.
	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>		
1835	31,670	10,907	26,066	.....	.....	147,801
1840	45,516	12,687	126,664	.....	5	176,844
1845	64,470	27,509	398,263	.....	.....	227,462
1848	106,329	38,305	541,038	.....	.....	286,917

One of the most important results of the legislative investigation was the demand of the State for detailed annual reports of the traffic of the companies to be presented to the legislature by the two State directors. As a result we are able to analyze in detail the source and character of the traffic from 1850 to 1871, when the Delaware and Raritan Canal was leased to the Pennsylvania Railroad. In fact, the report of the commissioners enables us to present in a general way the amount and character of the traffic prior to the investigation. Table 35 shows that the canal carried practically no passengers during the

¹New Jersey Commission, *Report of the Commissioners appointed to Investigate Charges made against the Directors of the Delaware and Raritan Canal and Camden and Amboy Railroad and Transportation Companies*, 1850, pp. 5-10.

²Carey, *A Review of an Address of the Joint Board of Directors of the Delaware and Raritan Canal and the Camden and Amboy Railway Companies*, By a "Citizen of Burlington," 31.

³New Jersey Commission, *Report of the Commissioners appointed to Investigate Charges made against the Directors of the Delaware and Raritan Canal and the Camden and Amboy Railroad and Transportation Companies*, 1850, pp. 39, 46, 62.

years selected and that the railroad did not carry any inferior merchandise. The inferior merchandise included such heavy and bulky traffic as coal, iron, and timber, while the superior merchandise included the lighter goods. The table shows further that in this early period the canal carried three-fourths of the superior merchandise.

During the two decades between 1850 and 1870, the railroad gradually monopolized most of the trade included under superior merchandise, but the canal continued to control the increasing coal trade. The reports of the State directors furnish the following classification (table 36), showing the amount and source of this traffic:

TABLE 36.—*Sources of the coal tonnage carried on the Delaware and Raritan Canal.*

Year.	Richmond.		Schuyl-kill. Boats and barges.	Bristol.		Wells Falls. Boats and barges.	Cumberland. Boats and barges.	Total tonnage.
	Boats and barges.	Sloops and schooners.		Boats and barges.	Sloops and schooners.			
	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>	<i>tons.</i>
1850	221,385	76,927	145,392	18,449	38,844	70,406	.....	568,403
1855	437,259	47,949	668,268	23,041	61,826	113,932	14,089	1,356,361
1860	234,981	11,443	694,333	318	741	314,237	27,210	1,283,265
1865	493,895	14,664	664,539	.....	.....	339,621	39,390	1,552,108
1870	429,671	28,516	288,474	23,126	.....	229,067	.....	1,612,451

Table 36 shows that the bulk of the coal trade was derived from the Schuylkill mines and was brought to the Delaware by means of the Schuylkill Navigation Company or by the Reading Railroad, which since 1842 had established a direct connection between these mines and the Delaware at Port Richmond. Also a very large amount of coal came from the Lehigh Valley. This coal, instead of following the Morris Canal, descended the Delaware Division of the Pennsylvania Canals and was transferred to the feeder of the Delaware and Raritan at Wells Falls. When the Pennsylvania Railroad gained control of the canal in 1871, all of the Schuylkill coal, which at the same time had passed entirely under the control of the Reading Railroad through its lease of the works of the Schuylkill Navigation Company, was denied the use of the Delaware and Raritan Canal by the Pennsylvania Railroad. The Philadelphia and Reading was therefore forced to ship this coal to the markets of the North and East by rail or by towing the barges along the New Jersey coast and the Sound. This accounts for the fact that the annual traffic of the canal decreased almost 1,000,000 tons immediately after passing under the control of the Pennsylvania Railroad.

The coal trade was by no means the only traffic of the canal between 1850 and 1870. Large quantities of timber, lumber, flour, grain, and merchandise sought the canal in increasing quantities, and what is

especially significant is the fact that in 1870 the amount of merchandise which was transported through the canal was more than four times that of 1850.

TABLE 37—*Traffic other than coal on the Delaware and Raritan Canal.*

Year.	Lumber.	Timber.	Grain.	Flour.	Iron.	Merchandise.
	<i>sq. ft.</i>	<i>cu. ft.</i>	<i>bushels.</i>	<i>barrels.</i>	<i>tons.</i>	<i>tons.</i>
1850	5,650,753	819,262	509,549	77,651	20,782	100,890
1855	9,182,960	1,986,852	1,335,765	257,621	36,337	159,766
1860	11,878,913	2,314,749	742,661	221,203	40,633	227,394
1865	14,143,297	2,878,206	2,476,683	208,838	41,144	295,338
1870	16,561,416	3,393,362	1,104,053	303,236	57,865	425,998

It is impossible to compute the entire tonnage of the canal, for neither the lumber and timber traffic, nor (since we are not informed as to the character of the grain trade) the grain traffic, can be reduced to tons with any degree of accuracy. Excluding the traffic which does not appear in tons in the two preceding tables, we find that the traffic of the canal increased approximately from 700,000 tons in 1850 to 2,000,000 tons in 1870. For the other classes of traffic specified the increase was at a more rapid rate, except that the grain traffic had fallen off in 1870 from the high figure of 1865.

EXTENSION TO PITTSBURGH—THE PENNSYLVANIA CANAL.

The close of the first quarter of the nineteenth century was marked by vigorous efforts on the part of many States of the Union to improve their transportation facilities. The commercial cities on the Atlantic seaboard had watched with interest the growth of the West and the rapid expansion of its trade soon after 1815. Yet, apart from local sporadic movements, no very serious attention had been paid to the matter of better western communications. To this end, however, these cities now became the leaders of popular movements in their respective States. In the West the transportation enterprises proposed, and later carried through, were scarcely less numerous or important.¹ The principal works built were designed to connect the Great Lakes with the Ohio and Mississippi Rivers. The minor works were either branches of the main lines or short ones to provide outlets for the trade of the interior of the States. Before entering upon a discussion of the movement in Pennsylvania, it is desirable to examine the causes giving rise at this particular time to the general activity of the eastern and western States in transportation improvements.

In spite of the large immigration into the West before 1815, its economic importance until then was comparatively inconsiderable.

¹"It is reported that, from an actual examination of the subject, no less than 102 canals are made, making, and projected in the United States." *Niles' Register*, XXX, 317, July 1, 1826.

This was due largely to the fact that the conditions governing the prosperity of newly settled regions were absent.¹ Isolated from the markets of the eastern seaboard, the western farmers were obliged to send most of their surplus produce down the Mississippi. The route was long and dangerous, and there was indeed little demand for their commodities in the sparsely settled districts along the lower course of the river. Hence most of their exports had to be sent to market around by sea to the Atlantic cities or to foreign countries. The value of these shipments was small.² Local manufactories existed, turning out such articles as were necessary for the simple economy of the western settlements. Yet even under these conditions, here and there in the Atlantic States, especially in the cities along the coast, groups of far-seeing citizens could be found who believed that the West had a bright future. Many had abundant faith in its possibilities, but its trade was relatively too unimportant to attract the attention of the greater proportion of the population.

Soon after the War of 1812, however, two events occurred which profoundly affected the development of the West. The introduction of the steamboat and, by 1817, its common use upon the Mississippi and its tributaries, brought the West into easy communication with the seaboard. The result was an immediate increase of trade.³ But what was even more significant was the fact that the spread of cotton culture into the Southwest had now given to the States of the Northwest their first important market. These two events, happening about the same time, furnished the necessary conditions for a speedy development. A lively trade now sprang up between the farmers of the Northwest and the Southern cotton planters. The absence of complete and reliable statistics makes it impossible accurately to determine its extent, but they are sufficient to establish the belief that it was large, and also that it grew up almost entirely after 1815.⁴

The States on the Atlantic seaboard were soon engaged in a keen rivalry for the trade of the West. Since commercial expansion

¹An excellent discussion of these influences, their absence in the West before 1815, and the circumstances giving rise to the economic importance of the West after that date is given by Callender, "The Early Transportation and Banking Enterprise of the States in Relation to the Growth of Corporations," in *Quarterly Journal of Economics*, XVII, 116-137, Nov. 1902.

²Roads, of course, led over the mountains to the eastern seaboard, but very few articles would pay for their conveyance there by land. Live stock, however, was frequently driven to the eastern market.

³"This commerce is already [1818] very great and fast augmenting. As an example of the constant and increasing movement on the Mississippi and its tributary waters, and of the immediate advantages to be derived to us by connecting those waters with the Susquehanna, by means of the Allegheny River, I will state that there will be 30 steamboats this year [1818] on the Mississippi and its tributary streams; 594 flat-bottomed boats and 300 barges arrived at New Orleans from the upper country in the year ending October 1, 1817. A large proportion of this came from the waters which could be united with the Susquehanna, and of course, would come to the Philadelphia market."—Breck, *Sketch of Internal Improvements already made by Pennsylvania*, 76.

⁴Callender, "The Early Transportation and Banking Enterprise of the States in Relation to the Growth of Corporations," in *Quarterly Journal of Economics*, XVII, 128, Nov. 1902.

depended upon success in this contest, their capital cities entered upon the struggle with tenacity of purpose. It is scarcely necessary to mention the fact that the outcome must depend upon the question as to which one of these States could provide the quickest and cheapest route of transportation. Hence those who had long advocated such improvements soon found themselves in the midst of a popular movement for better transportation facilities to the West. New York took the lead, and on July 4, 1817, the first excavations were made for a canal between Rome and Utica. In October 1825 the through line was completed and the city of New York was united with the Great Lakes by a stretch of navigable waters via the Hudson River and the Erie Canal.¹

The worthy example of New York, as has been said, was a strong factor in arousing Pennsylvania to action. Scarcely had the Erie Canal been commenced before signs of the approaching popular movement appeared. Numerous articles were published in the newspapers or were circulated in pamphlet form for the purpose of impressing upon the public the need of a canal to compete with New York. A pamphlet written by a State senator² from Philadelphia set forth the "superior situation of Philadelphia, geographically considered, for the attraction of the great and increasing trade of the countries bordering on the Susquehanna, the lakes, and the western rivers." He compared the distances from Pittsburgh to New York and Philadelphia, and showed a handsome margin in favor of the latter. He estimated the distance from Pittsburgh to New York at 766½ miles; from Pittsburgh to Philadelphia, 423 miles. The resources of the two States were contrasted to the advantage of Pennsylvania. The New York canal commissioners were quoted to the effect that they expected from the Erie Canal a revenue from which "the whole expense of this magnificent operation would be defrayed in a few years, and an immense revenue would be secured to the State. This would enable it to patronize literature and science, to promote education, morality, and religion; to encourage agriculture, manufactures, and commerce; and to establish the interest of human improvement upon an imperishable basis and to an incalculable extent." If these results were confidently expected in New York, the outlook in Pennsylvania was certainly more promising. Unless immediate action were taken, however, the natural advantages of the latter State were bound to be outweighed by the promptitude of New York.

With reference to Baltimore as a rival, the situation was alarming. By way of the new National Road, that city was 90 miles nearer the Ohio Valley than was Philadelphia. Moreover, the road was, over a

¹Soon after the completion of the Erie Canal the State supplemented it with an extensive system of canals reaching many parts of the State. Note that in New York the through line to the West was built first.

²Breck, *Sketch of Internal Improvements already made by Pennsylvania*, 41.

part of its length, free from tolls,¹ while heavy fees had to be paid upon the whole distance from Philadelphia to Pittsburgh. To protect the commerce of Philadelphia, in the face of competition from both the North and the South, the need of a navigable water communication to the West was so urgent² that, if necessary, she ought to build it alone. The views thus set forth and the arguments used were indicative of a feeling shared by many, especially in Philadelphia.

The movement spread gradually, and was soon reflected in speeches and resolutions in the legislature. On January 3, 1823, William Lehman³ proposed the following resolution in the house, which was adopted:

*"Resolved, That the Committee on Roads and Inland Navigation be instructed to consider the expediency of appointing commissioners, whose duty it shall be to furnish annually to the Legislature in the early part of the sessions a properly digested view of the state of the roads, bridges and water-courses of the state; and also to cause to be explored the route between the Schuylkill and Susquehanna through the great valley of Chester and Lancaster counties and also the most suitable routes between the waters of the Susquehanna, the Allegheny, and Lake Erie, for the purpose of ascertaining the practicability and the probable expense of connecting these streams by a water communication."*⁴

On February 24 the committee reported a bill entitled "An act providing for the appointment of a board of commissioners for the purpose of promoting the internal improvement of the State." No immediate action was taken. On December 5 of the same year, however, it was referred to a special committee, and two weeks later this committee reported⁵ that examinations and surveys ought to be made at once for a main route of water communication between the Susquehanna and the Allegheny Rivers. This opinion was formed only after a careful consideration of the favorable geographical and material endowments possessed by Pennsylvania, and of the urgent necessity of keeping pace with the States to the north and to the south to prevent commercial extinction. In its report the committee stated:

"On the north side of Pennsylvania, before the lapse of many months, New York will have united by a canal of more than 400 miles in length the Hudson River with Lakes Champlain and Erie. On the south side of the State, Maryland and Virginia have projected a noble scheme of uniting the Potomac with the Ohio. These improvements so honorable to the enterprise of the respective States, and so useful to our common country, as permanent sources of national riches and aggrandizement, should excite a spirit of emulation, and

¹It was toll-free between Fort Cumberland and Brownsville, a distance of 72 miles.

²The movement even in its commencement was first to build a main line of communication to the West. "To counteract these threatened evils, we must furnish a *cheaper* water intercourse by some of the routes hinted at . . . We must work our way to the Susquehanna, and thence to the Allegheny first and we must go about it soon, too." Breck, *Sketch of Internal Improvements already made by Pennsylvania*, 70.

³Dr. Lehman was one of the most earnest advocates that could be found in the State for the adoption of a system of internal improvement. At this time he was chairman of the Committee on Roads and Inland Navigation.

⁴Pennsylvania, *House Journal*, 1822-23, p. 186.

⁵Full text of report in *Ibid.*, 1823-24, pp. 163-170.

induce Pennsylvania to create improvements of a similar character, and endeavor to fix within her own limits, and direct to her own seaport, at least a portion of that trade and wealth which awaits the enterprise of those States who establish easy and cheap communications with the vast populations rising in the West. . . . Noiseless and modest she may continue to move, but unless she awakes to a true sense of her situation, and ascends to times and circumstances, she will be deprived of the sources of public prosperity, her career of wealth will be less progressive than that of other States, and instead of regaining the high commercial rank she once held, she will be driven even from her present station in the system of the Confederacy."

As a preliminary step to the system of transportation improvements which it felt to be impending, the committee urged the legislature to consider favorably the bill providing for the appointment of a board of commissioners. After numerous discussions it passed both houses¹ and received the approval of Governor Shultze on March 27, 1824.²

This act authorized the governor to appoint three commissioners to explore routes for a canal from the East to Pittsburgh. Three possible routes were to be examined—one via the waters of the Juniata and Conemaugh Rivers; a second through the West Branch of the Susquehanna, the Sinnemahoning, and the Allegheny; the third, via the upper waters of the Schuylkill, Mahanoy Creek, the Susquehanna, the Moshannon, or Clearfield and Black Lick creeks, the Conemaugh and Allegheny Rivers. Also, the country between Philadelphia and the Susquehanna was to be explored.

The appointments³ were made within four days of the passage of the act. Since a report, containing all the necessary information concerning the above routes, was required to be made to the governor of the State before the next session of the legislature, the task laid out for the commissioners was no mean one. Examination and surveys were immediately commenced, and on February 2, 1825, the report⁴ was ready. Much difficulty was experienced in securing the services of a competent engineer, and the work had to be commenced without one. Their labors convinced the commissioners of the "perfect practicability of making a canal" throughout the whole distance from Philadelphia to Pittsburgh. The route recommended comprised four sections, as follows:

1. From Philadelphia to the Susquehanna, a few miles above Harrisburg.
2. From the east bank of the Susquehanna to the upper forks of the Franks-town Branch of the Juniata, near Hollidaysburg.
3. From this point over the Allegheny Mountains, by a tunnel 4 miles long, to the forks of the Little Conemaugh River.
4. From this point to Pittsburgh.

¹At the third reading in the legislature the vote stood 53 yeas, 34 nays. Pennsylvania, *House Journal*, 1823-24, p. 915.

²*Ibid.*, 1101.

³The commissioners appointed were Jacob Holgate, of the city of Philadelphia; James Clarke, of Westmoreland county; and Charles Treziyulney, of Centre County, all supporters of the political party in power. See *Ibid.*, 1824-25, II, 285-287, and *Harrisburg Chronicle* of April 12, 1824.

⁴Full text of report in Pennsylvania, *House Journal*, 1824-25, II, 239-285.

The arguments brought forward in favor of the improvement were very much the same as those already mentioned.¹ In spite of the efforts of Philadelphia's enterprising neighbors, it was confidently asserted that with a canal to the West she would become the metropolis of the Union. Moreover, both the impetus it would give to the economic development of the State and its financial success were urged. The computed cost of the three sections from Middletown to Pittsburgh, built with American locks,² was \$3,000,000. Money could be borrowed at 4½ per cent, and the canal completed in 6 years. It was predicted that the tolls would "support the government and educate every child in the Commonwealth." No immediate action was taken by the government to execute the work proposed. However, the report of the committee was the subject of a good deal of discussion both within the legislature and throughout the country, and it was not without effect in hastening the commencement of the Pennsylvania Canal. The scheme was by no means popular in some parts of the State. Apprehensions of the expense involved and fear of failure made many public-spirited citizens hesitate to indorse a movement for commencing a canal to the West. Besides, its promoters had no concerted and well-formulated plans, and little opportunity to exchange opinions. It was therefore natural that means should be devised by which the popular agitation might be directed and by which thousands in the remote parts of the State might be educated in the matter of transportation improvements. This was furnished by the formation of "The Pennsylvania Society for the Promotion of Internal Improvements in the Commonwealth."

The preliminary meeting was held on November 26, 1824, and on the 14th of the following month the formal organization took place and the constitution was adopted. Its object was clearly indicated in its name. Forty-eight of the leading citizens of Philadelphia were the charter members, while the honorary list contained the names of some of the most active friends of internal improvements in the United States. Within a year a fund of \$5,540 was accumulated by the members paying \$100 each and by subscriptions from interested citizens and corporations.³ The educational work was placed in the hands of

¹The report was signed by only two of the commissioners. The reasons for Mr. Trczyulney not signing it were set forth by him in a letter to Governor Shultze, on February 9, 1825, and published in the *Pennsylvania, House Journal*, 1824-25, II, 287. Mr. Trczyulney made a report, however, to the legislature in the same manner as the other commissioners. His report differed from those associated with him mainly with regard to passing judgment upon the best route for connecting the eastern and western waters without examination of all the routes.

²The European plan of building locks of cut stone, and counter arches of brick turned in the bottom, was very expensive. On the New York canals and the Union Canal of Pennsylvania wooden foundations were used, and the commissioners recommended these for the proposed canal.

³These were principally coal companies. See Carey, *Brief View of the System of Internal Improvements of the State of Pennsylvania*, 13.

"At a meeting of the 'Pennsylvania Society for the Promotion of Internal Improvements in the Commonwealth,' held at Heiskell's Hotel, February 25, 1825, . . . two letters were read, one from the Lehigh Coal and Navigation Company, highly approbatory of the objects and efforts of the society, and tendering a donation of \$200 as their contribution towards the effectuation of those objects; the other of similar import, with a donation of \$100 from the Schuylkill Navigation Company." *United States Gazette*, March 1, 1825.

an "acting committee." Broadly speaking, it was twofold: first, to disseminate knowledge throughout the State regarding the present transportation situation and the urgent need of improvements; second, to collect information possessed by other States and foreign countries concerning transportation. The former was designed to strengthen the ranks of the progressive party until a united effort would force the legislature to action. The latter would put them in possession of the technical knowledge required for the work of construction as soon as it should be authorized.

Several movements were soon started to effect the first of these objects. To these attention will be given later. As a preliminary measure, however, a circular letter was sent to leading men in all parts of the State, outlining the plans and purposes of the society and inviting their cooperation. Various pamphlets on turnpike roads, canals, and railroads were published and widely circulated. To these and similar efforts to mold public opinion, many of the city and country newspapers gave their support.

To attain the second object the recent experience of New York in building the Erie Canal was studied. In addition to this, William Strickland, an architect and engineer of Philadelphia, was employed at a liberal salary to make an investigation of European railroads and canals. He left Philadelphia in March 1825, and returned the following December. Most of his time was spent in England and Scotland. He procured for the society a working model of a locomotive engine of the best type then known, having a two-man power. His report,¹ which was soon published, contained a collection of useful information concerning the various purposes of his mission. He described conditions and made numerous drawings of various parts of railways, canals, etc. He was noncommittal and did not apply the information received to American conditions nor recommend the adoption of either railways or canals in Pennsylvania.

Meanwhile vigorous efforts were being put forth to spread the popular movement. At a meeting of the Improvement Society, held in February 1825, a committee was appointed to prepare an address² to the citizens of the State concerning the urgent need of a direct line of communication to the West. Within a week it was ready and soon it was widely circulated.³ Its framers disclaimed at the outset any prejudice for or against any particular route. The same attitude was announced regarding the adoption of a railway or a canal. Not until accurate explorations and surveys had been made, and fuller informa-

¹Strickland, *Reports on Canals, Railways, Roads, etc.*, 1-46.

²A brief address had been published in the *United States Gazette*, Jan. 25, 1825. It occupied one column and was concerned mainly with showing the relative decline of Philadelphia's trade as compared with New York and Baltimore.

³*An Address to the Citizens of the Commonwealth of Pennsylvania by a Committee of the Pennsylvania Society for the Promotion of Internal Improvements in the Commonwealth.* It was issued in the form of a pamphlet of 10 pages. The newspapers of the State were requested to copy it.

tion obtained by disinterested parties, could these questions be properly determined. Waiving these minor considerations for the time being, it was earnestly hoped that there would be a united effort on the part of all the people of the State to bring about a transportation line to the West. Three principal arguments were brought forward to justify the present appeal to the people—the financial benefit; the need of the proposed work to preserve the commercial life of Philadelphia; and the effect it would have upon the economic activity of the State. Let us briefly examine the case as presented.

The financial success of a trunk-line to the West was assured. The tolls of the Erie Canal had increased from \$20,224 in 1821 to \$340,642 in 1824. The yearly interest on the capital invested in the canal was \$375,823; and even before its completion the tolls were almost equal to this sum. New York expected to liquidate the entire debt in 10 years, and then the canal fund would defray all the expenses of government and leave an annual surplus to extend internal improvements within the State. If this could be done, surely Pennsylvania, a richer State, and one better situated for controlling the trade of the West, had insured to her, from the start, the ultimate success of a similar work.¹

Philadelphia's peculiar interest in the proposed improvement was explained by the fact that the exertions of her neighbors on the north and on the south threatened her commercial extinction. The present efforts were calculated not merely to regain what had been lost. The struggle was of a more serious nature. For without a more rapid and less expensive route than then existed, not even the trade with the western part of Pennsylvania could be retained.

To illustrate the general economic effect of internal improvements, the advantages England had derived from her canal system were outlined. Reference also was made to the stimulating effect of the Middlesex Canal² upon the dormant energies of New Hampshire. A "more recent and still more impressive" instance was found in New York. Land contiguous to the Erie Canal had risen in value from \$3 to \$5 per acre. Towns were springing up along its banks in places where, a few years previously, there were no settlements at all. Small villages, within 3 or 4 years, had doubled their population.

The advantages that would accrue to all classes from improved transportation methods were carefully detailed. The farmer would find increased demand, brisker sales, and higher prices for his produce;

¹"Though it may at first appear doubtful, we feel confident that immense as are the benefits secured to New York by her Erie Canal, the Pennsylvania Canal (or railway as the case may be) to connect the settlements on the Allegheny with those on the Susquehanna, the Schuylkill, and the Delaware, will insure to this State more solid advantages."—*Extract from the address.*

²The company was incorporated in 1789, although the canal was not completed till 1808. It extended from Chelmsford on the Merrimac, 2 miles above Lowell, to one of the inlets of Charles River, in Charlestown. This canal, like the Boston and Lowell Railroad, was designed to facilitate intercourse between the Merrimac Valley, in New Hampshire, and Boston. Tanner, *Canals and Railroads of the United States*, 43.

the merchant, a wider field for his business; the manufacturer and mechanic, more certain employment and better pay for their industry; the capitalist, a better interest on his money; and the owner of lands and houses, a rise in rents of 25 or 30 per cent. Since every class participated in general prosperity, and suffered in general depression, the movement for internal improvements deserved the support of all.

While the attention of the public was being directed repeatedly to the subject of transportation, the Improvement Society was occupied in promoting another movement. Its purpose was to impress the legislature with the strength of the popular movement. At the suggestion of the society, a public convention¹ of the citizens of the city and county of Philadelphia was held in the county court-house on January 24, 1825.² The attendance was large and the whole subject of internal improvements was discussed at length.³

A resolution was passed to the effect that a "water communication ought to be opened with all practical expedition between the Susquehanna and Allegheny Rivers, and between the Allegheny River and Lake Erie, at such points as the wisdom of a suitable board of skillful and experienced engineers may select"; also that the work ought to be built and paid for by the State. A committee of 24 was appointed to prepare a memorial to the legislature embodying the opinions of the convention. The "acting committee" of the Improvement Society rendered valuable assistance in this matter.

The memorial⁴ was duly prepared and the organization for its extensive circulation was carried out even to the minutest details. Ward and district committees in every county in the State were engaged to secure signatures. An examination of the county newspapers of this date shows that the memorial aroused much interest. Public meetings were held in halls or school-houses in many communities to discuss the various phases of the question at issue. It took but a few days to complete the canvass in some districts, while in others the matter required more time. By the middle of February the memorials began to be presented to the legislature, and, for some weeks afterwards, they continued to pour in.⁵ Their effect was reflected in a bill⁶ reported in the senate on the last day of February 1825, entitled, "An act to appoint a board of canal commissioners." It passed this body on the eighth of the following month, and the next day the clerk of the senate presented it to the lower house for concurrence. With various changes and amendments it passed the house on April 6 by a vote of

¹A full account of the proceedings of this convention is given in the *United States Gazette*, Jan. 28, 1825.

²The meeting adjourned after some preliminary discussion and reassembled 3 days later.

³Chief Justice William Tilghman was president of the meeting, and Nicholas Biddle, president of the U. S. Bank, was secretary.

⁴For the full text of this memorial see Bishop, *The State Works of Pennsylvania*, App. I, p. 261.

⁵See *Pennsylvania House Journal*, 1824-25, I; also *Pennsylvania Senate Journal*, 1824-25.

⁶*Ibid.*, 1824-25, p. 519.

63 to 15. A compromise on the points of difference was easily adjusted and on April 11 it was duly approved¹ by Governor Shultze.

This act repealed the one of March 27, 1824, and now empowered the governor to appoint five canal commissioners. Their duty was to take all necessary steps in preparation for "the establishment of a navigable communication between the eastern and western waters of the State, and Lake Erie." The board was to choose one of their number for a president; also, the appointment of a suitable secretary with an adequate remuneration rested in their hands. No compensation was to be allowed for their services, but they were to be reimbursed for all reasonable expenses incurred in the execution of their duties. Power was given to them to employ, at reasonable salaries, engineers, surveyors, and draftsmen to assist in making examination and surveys. After this work had been done the commissioners were instructed to make detailed estimates of the sum of money necessary to complete the canals, feeders, and reservoirs, according to the plan they should recommend. They were also directed to inquire how a canal fund to build the works could best be created; to ascertain the terms upon which loans could be obtained; and to devise means for providing for the payment of the interest, and for the ultimate liquidation of the principal.

By the appointment of a board of canal commissioners the aims of the numerous friends of internal improvements had been only partly realized. By the movement which culminated in the Harrisburg convention, held from August 4 to 6, 1825, more impressive influence than numerous petitions was brought to bear upon the government, urging it to provide for the immediate commencement of the canal.

At a public meeting of the citizens of the city and county of Philadelphia on May 3, called by the committee of 24, the preliminary arrangements were made for this gathering. The "acting committee" of the Improvement Society was directed to second the movement. A large number of influential citizens was present and after a good deal of discussion it was decided to call a convention at Harrisburg, on August 4, to discuss the whole subject of internal improvements.² It was believed that if delegates from all quarters of the State could thus be assembled, and if a majority of them indorsed the popular movement for a canal to the West, the government then would have no reason to further delay the commencement of the work. Six delegates from the city and seven from the county of Philadelphia were appointed. The duties of the committee of 24 were renewed, and arrangements were made for a systematic canvass, so that every part of the State should be represented. Within two weeks several counties had

¹Pennsylvania, *House Journal*, 1824-25, I, 816. Full text of act in Pennsylvania, *Laws*, 1824-25, chap. 126, pp. 238-241.

²A full account of the proceedings of the meeting is given in the *United States Gazette* of May 10, 1825.

appointed¹ or were preparing to appoint delegates. From this time on the county newspapers contained reports of numerous meetings held for the discussion of transportation improvements, and to consider the advisability of sending representatives to the proposed convention.

It is not to be understood that there was no opposition; far from it. Even in the town meeting held at Philadelphia serious objections¹ were raised to the resolution to call a convention. It was urged that such a gathering might retard the movement for putting through at once the main line of works; that it might excite angry feelings; or that discord in the convention might produce hostility in the legislature. As would naturally be expected, the arguments used in other parts of the State were of a different character. *The Miners' Journal*, of Pottsville, Schuylkill County, was perhaps the most pronounced and bitter in its criticisms. It was urged that a portion of the State would be injured by the improvements that were in contemplation, and that superabundant advantages would accrue to Philadelphia at the expense of the country districts. These and other objections were due largely to sectional jealousies and local interests prevailing to a greater or less degree in various parts of the State. Among the criticisms offered at this time, however, were some that proved to be nothing short of sound judgment. Moreover, they showed, at least to unprejudiced minds, that there were really two sides to the canal project. The following article from the *Erie Gazette*, written when the popular movement was nearly at its height, is typical of a feeling shared by a conservative element in various parts of the State:

"The advocates of a grand canal in this State have, in taking the New York canal as the basis of their calculations, entirely overlooked its peculiar advantages. The Clinton Canal (it may with propriety be so named) traverses a country so level that the amount of its lockage does not much exceed the height of Lake Erie above tidewater—passes at right angles to the course of numerous rivers that flow from the south, is consequently easily and abundantly supplied with water—possesses along its whole extent a fine wheat country—terminates in Lake Erie, and thus connects an immense inland navigation with the ocean at the city of New York, the commercial depot of America. A canal through Pennsylvania would have nothing in common with this, excepting its termination in Lake Erie. How far it might compete with others for the trade of that lake may in some measure be estimated by the fact that before it could advance 15 miles from the lake it would require a lockage almost equal to the whole of that of the New York canal. The amount of the whole lockage required can only be known when surveys are completed, probably four or five times that of New York. The expense of constructing such a canal ought to be estimated, not from the average of the other, but the most expensive part of it. . . .

"It is not intended by these observations to discourage the formation of canals where they may be of advantage. No objections occur to exploring and surveying the State with a view to improvements. Information will be gained, and if it is found to be impracticable or unadvisable to canal its whole

¹*United States Gazette*, May 24, 1825.

extent, still it may be done partially with advantage and profit. Our State possesses many natural advantages; let us improve them. We will certainly fail to compete with the State of New York for the trade of the West. Nature has given her advantages in such a competition which we can not overcome."¹

In spite of opposition and objections that were urged against both the proposed canal and the convention, the movement proceeded. Whether on account of interest in promoting the cause or to check any effort made by the friends of the movement, delegates² were appointed by all the counties of the State except two. At 10 o'clock Thursday morning, August 4, they assembled in the hall³ of the house of representatives at Harrisburg. A committee was appointed to frame a set of resolutions which would bring the matters for consideration properly before the meeting. The following day they reported in favor of the State building a canal to connect the Susquehanna with the Ohio and Lake Erie. A storm of opposition at once arose. It was confidently asserted that the measure was impracticable; that the movement was premature; that the canal would injure the turnpikes; that the resources of the State were inadequate for building the works; that it would require oppressive taxation to which the people would not submit; that Philadelphia was the prime mover in the agitation, and that she would receive the greatest advantage from the improvements; that those parts of the State through which the canal passed would receive undue benefits at the common expense. Among those opposed to the scheme were the delegates from Bedford, Franklin, Cumberland, York, Lancaster, Northampton, Pike, Wayne, Bradford, and Tioga Counties.

The cause for this opposition is apparent. An examination of the map of Pennsylvania shows that the first five of these counties are situated in the southern part of the State. Their exports, consisting of grain, flour, and other farm produce, were marketed principally in Baltimore and the neighboring counties of Maryland and Virginia. The turnpike through Lancaster gave a direct communication to Philadelphia satisfactory to the inhabitants of that county. The other district whose delegates unanimously opposed the resolutions was in the northeastern part of the State. These counties had no chance of sharing the benefits of the proposed improvements. Moreover, those on the northern border of the State carried on their limited trade with New York. The friends of the movement were in the majority, however, and ably refuted the arguments of those attempting to block the passage of the resolutions. The discussion was prolonged until the

¹This article, copied from the *Erie Gazette*, appeared in the *Harrisburg Chronicle*, Mar. 10, 1825.

²The *United States Gazette*, Aug. 19, 1825, in commenting upon this convention, said: "The convention at Harrisburg for internal improvements was, whether in reference to the majority or minority, superior to any body of the same number which has assembled in this State for many years."

³Provision had been made for the meetings of the delegates to be held in this place, by Mr. Lehman, the representative for Philadelphia, submitting in the house a resolution to that effect on April 11, which passed by a vote of 41 to 26. See *Pennsylvania, House Journal*, 1824-25, I, 791.

third day; and, finally, after the debate of numerous amendments proposed by the minority, the resolutions¹ as framed by the committee were adopted by a large majority.² The Harrisburg convention was a decided victory for the progressive party. It was now felt that the legislature had, in the proceedings of this body, the fullest evidence of the wishes of the people. To its action the public mind was now directed with confidence.

On December 6 the legislature convened. With reference to internal improvements, Governor Shultze's message³ was conservative; but it was regarded as "susceptible of no misapprehension."⁴ Referring to the much agitated canal, he stated:

"Desirable as it is to facilitate intercourse between all parts of our Commonwealth, and to do it speedily, still this desire will not induce the representatives of a prudent people to engage in such great enterprises without having before them all the information and the knowledge which are essential to entering upon and completing the work in the best, most durable, and most economical manner."

No time was lost in bringing to the attention of the legislature the wishes of the populace. The day after the opening of the session a resolution⁵ was introduced in the house looking towards the commencement of the long-desired canal. The matter was afterwards referred to from time to time. On January 16, 1826, the "Committee on Inland Navigation and Internal Improvement" introduced a bill⁶ entitled "An act to provide for the commencement of a canal, to be constructed at the expense of the State, and to be styled, 'The Pennsylvania Canal.'" It passed the third reading on February 2 by a vote of 61 to 32. The bill passed the senate⁷ on February 22, with minor amendments, which were approved of by the house the following day; and two days later, by the approval of the governor, the commencement of the canal to connect the eastern and western waters was provided for by an act of the assembly.

The act of February 25 provided for the commencement of the canal at both extremities simultaneously. Together, the parts authorized to be put under contract at this time constituted but a small fraction of the total length.⁸ They were as follows: From the western end of

¹For the full text of the resolutions see Bishop, *The State Works of Pennsylvania*, App. III, p. 266. The words "within her borders" in the first resolution were struck out, however, since it was urged that they might be considered as aiming a blow at the proposed canal to connect the Potomac and the Ohio. Another unimportant resolution was added to those reported by the committee, for which see *Niles' Register*, XXIX, 62, Sept. 24, 1825.

²The vote on the first three resolutions was approximately 87 ayes and 26 nays. The vote on the fourth resolution, which really had no bearing on the important objects of the convention, was 107 ayes and 6 nays.

³See Pennsylvania, *House Journal*, 1825-26, II, No. 1.

⁴From editorial in *United States Gazette*, Dec. 13, 1825.

⁵See Pennsylvania, *House Journal*, 1825-26, I, 11.

⁶*Ibid.*, 192.

⁷See Pennsylvania, *Senate Journal*, 1825-26, p. 363. The vote was 19 ayes, 14 nays.

⁸This act also provided for the construction of a navigable feeder of a canal from French Creek to the summit level at Conneaut Lake as soon as the canal commissioners should deem it expedient and practicable; also for the surveying and locating of a canal from Conneaut Lake to Lake Erie.

the Union Canal to a point on the Susquehanna opposite the mouth of the Juniata, and from Pittsburgh to the mouth of the Kiskiminetas. The combined length of these sections was 54 miles. Since they were common to all the routes proposed, it was considered safe to commence them before it was finally decided what line the canal should follow through the center of the State.

This view was the result of three reports which had been recently made to the legislature. The recommendations of the first board of commissioners, appointed March 27, 1824, have already been examined. Two reports¹ made by the board of canal commissioners previous to the passage of the act of February 25, 1826, demonstrated equally well the practicability of building a canal to connect the eastern and western waters. But the question of route for all the sections, excepting limited portions at either end, was still somewhat in dispute. Accordingly, more accurate and detailed surveys were necessary to warrant the legislature in deciding upon the best location for the canal.

In view of the policy adopted later, it is important at this point to note that the popular movement was for but one improved line of transportation. The various reports of the canal commissioners and of the committee on roads and inland navigation show that their efforts had been directed to the problem of discovering which one of the three possible routes was preferable. Moreover, the act of February 25 made no reference to the building or even to the surveying of lateral lines. The title of the act shows that it was to provide for *a canal* to be called "The Pennsylvania Canal" and further evidence is furnished by its preamble that public opinion called for the construction of a single work to connect the eastern and western waters. In a word, the whole movement for improvements in transportation facilities from the very beginning, until legislation was secured authorizing the commencement of construction, had been for a direct avenue of commerce to the West. That it should be pushed through at once with all consistent speed was the program agitated; for in no other way might Philadelphia have a fair chance with New York and Baltimore in the struggle for the western trade. Lateral lines were mentioned as being necessary as feeders to the main canal; but all reference to them indicated that the intention was to postpone their construction at least until the main line should be built.

That the State itself undertook to build the work rather than intrust its construction to a private company is not attributable to any fear of corporate power. On the contrary, the incorporation of companies to construct and operate works of public utility in many cases was considered necessary. Moreover, the State from time to time had made liberal subscriptions to the stocks of these concerns. Having

¹Dec. 30, 1825, and Feb. 3, 1826, found in Pennsylvania, *House Journal*, 1825-26, II, 159-163 and 222-223.

pursued a policy of assistance in the past, it was no radical change for the energies of the government to be applied directly to matters of internal improvement.

But there seem to have been definite reasons why the work was constructed by the State itself. In the first place, the era of large corporations had not been reached by 1826, and there was not the large quantity of floating capital, such as exists nowadays, ready to be applied to the purchase of stocks. Moreover, individual capital and energy were not considered commensurate with such an extensive enterprise as that proposed.¹ Again, even though sufficient private capital could have been commanded to build the canal, the advantages to be derived from it after its construction were regarded as too numerous and important to be surrendered to a corporation. It was believed that both the maximum of impartiality and the minimum of cost of operation would be insured by State control; and, since the canal was essentially a State object, these needed to be guaranteed to every one of its citizens. Moreover, the work was looked upon as a source of large income in the future. This point seems to have been hardly doubted by the majority. Hence the opportunity to fill the public treasury by such a legitimate source of income as canal tolls should be seized and not be forfeited to a few individuals. In view of the general acceptance of these ideas throughout the whole popular movement, the question as to who should build the contemplated improvement was discussed but incidentally, it being taken for granted that if the work were built at all it should be executed and operated by the State.

The work of construction was begun July 4, at Harrisburg. It seems to have been carried on with reasonable rapidity. In 1828 authority was given by the State for the construction of a railroad over those sections of the route that had been proven impracticable for a canal. The route of the main line between Pittsburgh and Philadelphia was opened in March 1834. The total length of the through line was 394.54 miles. There were also a number of lateral canals, including the extension to Lake Erie, aggregating over 400 miles.

¹ "The public are now firmly convinced that, in the United States, where the fortunes of private individuals are limited in amount, great public works can only be accomplished by the expenditure of the public treasury," *Facts and Arguments in Favor of Adopting Railways in Preference to Canals in the State of Pennsylvania*, 10.

CHAPTER VIII.

ROADS, CANALS, AND WATERWAYS IN THE SOUTH.¹

Roads and canals in the era preceding the railroad, 249. Economic sections of the South, 260. The needs of Virginia, 264. The Chesapeake and Ohio Canal, 265. The James River and Kanawha Canal, 269. North Carolina, 273. The Santee improvement, 276.

ROADS AND CANALS IN THE ERA PRECEDING THE RAILROAD.

The influence of physiography on the social, industrial, and commercial development of the coast region in the neighborhood of Charleston and Savannah is unmistakable. Coast configuration, soil, and climate have been determining factors. The region was semi-tropical and the people tilled their rice upon fields periodically submerged and relied for transportation largely upon the abundant waterways.

The location and character of the water-courses to a great extent controlled the spread of settlement and in many cases determined the commercial economy. One characteristic of large consequence, for example, was the shallowness of these channels. In contrast with the Virginia lowlands, where the so-called rivers were really arms of the sea, permitting the ocean-going craft of colonial times to sail in freely to the individual wharves of a thousand planters, the South Carolina coast was water-broken in a way which required the loading and unloading of cargoes at a central point and the collecting and distributing of supplies by means of small river craft. In Virginia little concentration of commerce was required so long as settlement was confined within the lowlands, and commercial towns, in spite of official efforts to promote them, failed to develop. On the coast of South Carolina and Georgia, on the other hand, commercial towns grew up spontaneously at the few points where dry land abutted upon deep harbors and where the network of interior channels gave access to an industrial area.

Rural settlement, as it progressed, developed long double lines of plantations, facing one another across each river, or groups of plantations where the alluvial tract widened out. The plantation system, which had practically a monopoly of agriculture in the region, was dependent for its prosperity upon commerce with the outside world, since its primary purpose was to produce, not the things needed on the estate, but rather a staple which could be exchanged for miscellaneous supplies—a characteristic of plantation economy which no laws restricting or regulating planting could essentially change. The plantations in any given district, since all were producing the same staple, were practically incapable of trading extensively with one another.

¹The greater part of this chapter is compiled from Phillips, *History of Transportation in the Eastern Cotton Belt*, to which the reader is referred for fuller data concerning transportation in the South. This monograph was prepared for the *History of Transportation*.

The great bulk of their commerce was necessarily with the outside world. Plantation labor provided for the commoner wants without interchange of service or goods, and plantation industry was of the simplest character. The methods of transportation were consistently primitive. Ox-carts by land and pole-boats or clumsy sailing craft by water were, for a very long period, the most efficient means for the carriage of freight in the lowlands. The chief avenues, whether for passengers or freight, were the waterways, and the most common vehicles were those which went by the name of "pettiaugers." The word "pettiauger" seems to have been a generic name for boats which could be propelled in turn both by sails and oars. Some were dug out and some were frame-built, some were round-bottomed and some were keeled. The coastwise channels were usually broad, and when the channel itself was narrow, there was generally a broad expanse of salt marsh or of cleared land on either side which would give the wind free play upon the sails of the craft. Where such was not the case, the sails would be taken in and poles or oars substituted. Sloops were used instead of "pettiaugers" in some cases where the course was clear, but where the route to a plantation was too crooked or too much overhung with trees to permit the use of sails, pole-boats and row-boats were regularly employed. These means of transportation were not operated independently of the plantation. Each well-organized plantation in the lowlands possessed its own boats, manned and superintended by the ablest negroes on the place. With these plantation crews, heavily laden boats would carry rice to market and bring back the simple but somewhat bulky supplies which the plantation needed. Within the plantation itself transportation was by canals which ran through the rice fields. If plantations lay at some distance from a waterway, the crops were usually carried by ox-carts to the nearest creek and there transferred to boats for the rest of the distance. Land traffic was, of course, in some cases necessary. A small stock of horses was imported into South Carolina at an early date, and they were used with both saddle and harness by the planters when quick locomotion was needed.

The South Carolina assembly made its first provision for road-building in 1682. Thereafter it gave considerable attention to providing for the building and repair of roads and bridges, as well as the care of navigable waterways. In view of the danger of attack from Indians or Spaniards and the possibility of slave insurrection, the making and maintenance of roads for swift rallying by the militia was dealt with by the government as a military necessity. In times of peace, however, a prevailing sentiment of security made the people very easy-going on this score and the roads were often in wretched order. They were built and cared for either by local commissioners authorized to call all male inhabitants over 16 into service on the highway, or in case of

private roads by planters who built them singly or in cooperation for their own convenience. In general there was a large prevalence of individualism and little dependence upon public authority. The planters were disposed to decide upon their personal and local needs and to do the needed work informally with their own plantation gangs at times when the crops gave a respite from tillage. For example, when in 1785 the planters on the Edisto River wished to secure the clearing of its channel, they were content with an enactment by the legislature authorizing commissioners to receive private subscriptions for the promotion of the work.¹ No public expenditure was provided for, it seems, and no tolls were to be levied nor any dividends paid upon subscriptions. The planters whose interests were to be promoted simply combined their resources on a voluntary basis. Another instance is noted by La Rochefoucauld,² who records that the planters nearest the Stone River in 1802 were projecting a canal connecting their estates more directly with Charleston, to be built by contributions and local assessments.

In the sandy districts the making and tending of roads required very little labor, merely the clearing away of the trees for a width of 10 or 12 feet, little ditching or grading being necessary. As a rule none was done. The sand formed a hard enough roadbed in wet weather, and was fairly good even in dry seasons, unless heavy traffic had "plowed the road." Often, where the sparseness of the pine trees allowed it, side roads would be made by teamsters in order to avoid deep sandbeds which lay in the main track. So long as the pine ridges were followed it was possible for any driver to "steer by compass" and make his way through the forest without regard to beaten tracks. The same easy-going method of travel still prevails in some measure in the pine-barrens country.

Where swamps were encountered conditions of travel were very different. In wet weather the ground was often of soft mud to an indefinite depth, and impassable for vehicles; in moderate seasons it was soft enough to cause the wheels to sink for several inches; and in dry weather the roads were so filled with deep ruts and rough clods as to furnish only wretched opportunities for traffic. The swampy ground was usually so covered by a dense forest growth that the opening of new tracks necessitated a great deal of labor. The laying of rough logs across the track for a "corduroy road" was a temporary device; for permanent roads causeways had to be built and frequently repaired with earth and brush or wooden slabs. Bridges or ferries had also to be provided at the crossing of streams. To meet local conditions in these cases a number of special legislative acts were passed, appointing special commissioners for particular bridges and causeways, and in some cases granting privileges to establish ferries and collect tolls.

¹*South Carolina Gazette*, June 2, 1785.

²La Rochefoucauld, *Travels Through the United States of North America*, I, 596.

For the sake of economy in labor and expense, the highways were laid out as far as possible to follow the pine ridges and to cross the swamps and streams only where absolutely necessary. The conformation of the land, furnishing pine-ridge peninsulas extending down from the uplands as watersheds between the several parallel rivers, made it easy to establish roads from points in the middle country to corresponding points on the coast. The building of roads parallel to the coast was much more difficult in the lowlands, and their maintenance, because of the problem of causeways, was also troublesome and expensive. The result was that the roads along the coast were usually in bad repair, and they were in large measure avoided by the inhabitants, who had learned by experience to prefer the water-routes.

The colony of Georgia was under a more paternalistic government than South Carolina. James Oglethorpe, in the period of his control, showed remarkable vigor in opening roads and trails. A news item from the town of Frederica, on the Georgia coast, published in the *Gentleman's Magazine* for January 1739, relates that in September 1738, after the arrival of a regiment of troops from Great Britain for garrison duty:

"The inhabitants of the Town went out on the 25th with the General, and cut a Road thro' the Woods down to the Soldiers' Fort in a straight line, so that there is an open Communication from thence; they perform'd this Work in three Days, tho' it is near 6 Miles thro' thick Woods."

The road which Oglethorpe opened, from the Savannah to the Altamaha River, revealed the richness of the intervening land and promoted the emigration of the Dorchester congregation from South Carolina to establish the Midway settlement and the town of Sunbury.¹ In 1735 the town of Augusta was laid out by order of the Georgia Trustees and soon replaced Fort Moore on the Carolina side of the river as the focus of the Indian trade. The importance of the town led Oglethorpe quickly to have a route marked out through the woods from Savannah to Augusta, to supplement the river communication.² The general development and system of transportation in Georgia was on the whole analogous to that of South Carolina.

The only demand for avenues to the distant interior in early times was that made by the requirements of the Indian trade. The need of the traders was met as a rule by the traders themselves, without any call upon the government or upon the planters for assistance. In fact, the trading-routes supplied avenues to the commonwealths at later times without the trouble of initial location by the authorities. Except where rivers were available, Indian traders used pack-horses in trains for their traffic. Since no wheeled vehicles were used, there was no need of anything more than trails; and there was no demand

¹Jones, *History of Georgia*, I, 491.

²A *State of the Province of Georgia, 1741*, in Georgia Historical Society, *Collections*, II, 72, 73.

for bridges and causeways sufficient to secure their construction. The routes of the Indian traders were mere bridle-paths through the wilderness. In view of the boggy character of most of the bottom lands and the general disadvantages of crossing large water-courses, these paths usually followed the watersheds as far as possible. When routes necessarily crossed river valleys, they were so located as to avoid steep ascents and to cross streams at points where the banks were firm. Between the primitive era and the railroad epoch the wagon-roads leading from the trading-points to the interior also tended to follow the routes of the Indian traders. Later, the railroads often found the same ancient routes the best for their purposes also.

In colonial times Charleston exported a very great quantity of furs, which her merchants obtained mostly from the distant hunting-grounds of the four great tribes of Southern Indians—the Cherokees, Creeks, Chickasaws, and Choctaws. The Carolina traders had dealings with all of these by means of their periodical journeys with their pack-horse men and laden beasts of burden over the long and tedious trading-paths. In 1707 Governor Archdale reported that the town of Charleston traded for nearly 1,000 miles into the continent.¹ The system of trading-paths was well-defined and post settlements became in many cases the important cities of later times. The settling of the up-country by the whites destroyed the utility of the trading-paths as such in South Carolina before the end of the eighteenth century.

The pioneer farmers of the Piedmont country were almost wholly independent of commercial relations in the early years of their occupancy. Incoming settlers brought a small surplus of necessary supplies which the established residents bought, and a few of the more enterprising made long wagon trips to Baltimore or Philadelphia and brought back a few loads of supplies. Those upland farmers who lived near enough to the rivers to ship their products to the coast found a market ready for all they could supply, and the demand spread to those more distant. Grain, however, proved too heavy to bear the expense of marketing, and tobacco came to take its place. It was easily carried and commanded a high price. The production in time reached a sufficient volume to call into existence a definite commercial system for the uplands, which aided in the development of the country until the beginning of the cotton era about 1800. The introduction of cotton completely destroyed the tobacco industry, shifted the basis for commerce, and gave much greater importance to the problem of transportation. The rise of the great short-staple cotton industry gave the world of commerce its first interest in the uplands of the lower South, and at the same time gave the people of that

¹Carroll, *Historical Collections of South Carolina*, II, 85 *et seq.*

district a paramount interest in securing easy connection with the ocean highway.

It was said as late as 1818 that two-thirds of the market crops of the Piedmont were raised within 5 miles of some river and the remainder not more than 10 miles from water that could be rendered navigable.¹ For the transportation of cotton, as also tobacco, water-courses were generally used where possible, and the function of the roads was mainly to supplement the rivers. Whether by land or water, the avenues of travel and commerce long remained extremely crude. Much complaint was made from time to time of the hardship for men and beasts, of the mishaps to vehicles and boats, and of the great expenditure of time and effort which the marketing of produce required. Decisive methods of progress, however, were not resorted to until after 1815. In the early days of the colony the legislature made provision for a skeleton system of roads and highways for the upland country, but left the repairs and care to the local courts or commissioners, who were also empowered to open new roads for local needs. Labor was obtained by a levy on the male inhabitants over 16, subject to certain exemptions. As a result of the fact that the upkeep of the through routes was left to local authorities, these routes were likely to suffer wherever they did not coincide with routes which were important to the locality in which they lay.

In the lowlands and parts of the middle country there were swamps and streams requiring causeways, bridges, and ferries, which were likely to be dangerous from want of repair and carelessness in management; in the pine-barrens, great expanses were unpeopled and the road levies were totally inadequate to the care of the important highways; in the uplands, the frequent washing of gullies in the hillside roads gave more work than the road-hands usually accomplished. The recurrence of great freshets endangered permanent improvements of any sort. The regularly established road system was more or less adapted to the needs of strictly local traffic in fair weather. Through traffic, special needs, and emergencies were not provided for by it. To remedy its shortcomings in part, special devices were applied in a number of instances, chiefly by granting charters for building and maintaining roads, bridges, causeways, and turnpikes, and receiving tolls for their use. A large number of these charters were granted, but the private toll-roads and bridges were distasteful to the people, who, while not usually objecting to payment for the services of ferrymen, balked at paying tribute to invested capital. The system of private works and tolls was merely an emergency device to tide over the time until a better system could be instituted.

Waterways were cared for in a similar manner. The system of opening the channels of rivers and keeping them free from obstruction

¹*Niles' Register*, XV, 135, Oct. 24, 1818, quoting *South Carolina Gazette*.

by logs and sand-banks was wholly analogous to that for the opening of roads. An act of the South Carolina assembly as early as 1734 directed the clearing of certain streams for navigation.¹ Commissioners were appointed for each section of each river and authorized to make assessments of labor and money on all persons who lived within certain distances of the waterway, or who were to be benefited by the improvement.

Enactments through most of the following century, whether in South Carolina or the neighboring States, followed the general plan. In some cases the persons liable for service in clearing the rivers were exempt from road duty. In a few instances, in the early nineteenth century, where considerable money was needed for the work, the commissioners were allowed to establish lotteries for the purpose. A number of companies were also chartered between 1799 and 1815 to render various rivers navigable, but not a great deal was done. In general, traffic was still too light in volume before 1815 to make effective demands for expensive systems of improvements. Cotton prices were very high and labor scarce. Everyone who could raise cotton in the Carolinas and Georgia could get it to market one way or another, and the price of the staple would more than pay any charges incurred. A large trade was developed between the uplands and Charleston and Savannah by boats and wagons. The general disposition was to leave to the future all problems which threatened, by calling for labor, to trench upon the energy which the farmers and planters might apply to the cultivation of their crops. The competition by the western producers of cotton, which began just after the peace of 1815, was necessary as a spur to the eastern cotton States to cheapen the cost of marketing their crops through improvement in the means of transportation.

While the down traffic in cotton was growing to large dimensions, the sparseness of population in the first decade of the nineteenth century, the dearth of capital, the remoteness of the region, and the difficulties of the country all hindered the development of better transportation facilities. The upward trade was very light. The commerce of the towns at the head of navigation gave employment only for some wagons and for a few pole-boats for each town to ascend with light cargoes. Pole-boats took 14 days from Savannah to Augusta, laden wagons about a week, barring accidents, and stage-coaches 3 or 4 days. With such facilities, up-bound freight rates were almost prohibitive. There was also a slight traffic across the Blue Ridge in live-stock, hay, and cereals from East Tennessee. Most of this traffic was along the French Broad River and through Saluda Gap.

Parallel to the coast, the roads to the interior had little long-distance traffic of a steady character, except for the stage-coaches with pas-

¹South Carolina, *Statutes at Large* (ed. by Cooper and McCord), VII, 482-486.

sengers and the mails. In special periods they were used by emigrants on their way west. As a rule, being mostly under the care of local authorities, they were in bad condition. In a few cases the Federal Government had built roads into the Indian country, but the activities of the Federal Government did not include keeping such roads in repair.

When the demand for better transportation did become insistent, and internal improvements gained the support of public sentiment, the steamboat era was just beginning. Naturally, people favored the investment of public and private capital and the use of public credit in works which were expected to facilitate commerce in all quarters of these States and to lessen the burdens under which industry was laboring. In 1817 a steamboat company was organized with a monopoly of traffic on all Georgia rivers. This company was bought out by Charleston capitalists in order to divert the trade from Savannah to Charleston, but the monopoly was destroyed in 1824 by judicial decision. After many disastrous experiments to find the exact draft best suited to the river, a line of steamers was established from Charleston to Augusta. The Steamboat Company of Georgia, established under the monopoly of 1817, had been aided by the State in 1820 to the amount of about \$100,000, as part of the invested internal-improvement fund, but in 1824 it seems to have released its stocks and bonds at considerable sacrifice.¹

Charleston and Savannah were by this time engaged in a vigorous campaign for the trade of the two States, and ready to resort to any means to get it. One instance may be cited by way of illustration, namely, the founding of the town of Hamburg, a project in which the whole State of South Carolina made the cause of Charleston its own. The irritating stimulus to this enterprise was the position of Augusta, which happened to lie on the Georgia side, and to which came a large part of Carolina produce for transshipment down the river. This did not suit either the State of South Carolina or the city of Charleston. When, therefore, a Mr. Schultz presented a memorial to the legislature of 1821, telling of his new town of Hamburg, across the river from Augusta, the legislature listened eagerly. A warehouse and other public buildings, together with some 84 houses, had been built. Schultz proposed an alliance with the Charleston interests by means of low freight rates and mercantile connections, and, in aid of his general scheme, asked of the legislature a loan of \$50,000 for five years on security, without interest. This was granted by the legislature, and to encourage further the building of Hamburg it was exempted from every sort of taxation for five years and authority to establish a bank was also given. Schultz advertised his town in all the South Carolina papers, and also in Savannah and Augusta. The town grew to some extent, but not so rapidly as its promoters had

¹Dawson, *Compilation of the Laws of the State of Georgia*, Resolutions, No. 22, p. 3; No. 277, p. 40.

hoped. Hamburg failed, on the one hand, to cut seriously into Augusta's control of the trade of the district, and on the other hand the Charleston men failed to provide two \$40,000 steamboats which had been more or less formally promised to run between Hamburg and Charleston. Schultz's personal debts could not be paid and the assembly ordered the mortgage on the town to be foreclosed.¹ Many of Schultz's friends came to his aid, however, and proceedings against him were suspended. Schultz and the Hamburg people felt outraged at the treatment of the South Carolina assembly and retaliated by carrying their trade to Savannah, and the town drifted almost out of existence as a focal point for the competition between Savannah and Charleston.

Steamboat traffic on the Savannah declined after the early twenties, the period of its greatest activity, the decline being due to the irregularity of the service, under the condition of frequent droughts and consequent inability of the boats to reach Augusta in the long seasons of low water. Cotton-boxes and pole-boats swarmed on the river in 1827, and crippled the steamboat traffic.² The fault was attributed at the time to the narrowness of beam and consequent deep draft of the steamboats, but no attempts at an improved design were made.

During the era of internal improvements, South Carolina invested very largely in public works. A board was established in 1819 which had very wide powers in regard to improvement in transportation. It was directed to lay off certain great roads between the rivers and to make improvements in the riverways themselves and to investigate the practicability of a system of canals. Two members of the board were engineers and three were "public-spirited citizens serving without pay." The board chiefly concerned itself in building locks around the falls of the rivers, and canals around the rapids. A large plan of public works was undertaken, all to be covered, in the sanguine estimates of the engineers, by the original million-dollar appropriation. But the million dollars was spent, and the work by no means done. A great deal of dissatisfaction with the board existed, and in 1822 the work was put in charge of a superintendent of public works, elected by the legislature.³

The canals and locks at Columbia were completed in January 1824, without further appropriations. The locks and sluices higher up the Saluda River were finished in 1825, and it was then possible for a boat laden with 40 bales of cotton to descend from Cambridge, near Abbeville, all the way to Charleston, passing 3 canals and 10 locks on the Saluda, 1 canal and 5 locks on the Congaree, and the 13 locks of the Santee Canal, making a total descent of 207 feet. The turnpike roads from the Saluda and Green Rivers through the moun-

¹*Georgia Statesman*, Feb. 6, 1827.

²*Georgia Courier*, June 25, 1827.

³*Charleston City Gazette*, Dec. 11, 1822, text of report; South Carolina, *Statutes at Large* (ed. by Cooper and McCord), VI, 189, No. 2295.

tain "gaps" to the North Carolina boundary were also completed without further appropriations. The major appropriations for the next 6 years were devoted to the Wateree River, upon which \$95,000 was spent on the "Wateree Canal" in 4 years, and nearly \$200,000 in 6 years on the Rocky Mount Canal and sluices on the upper river. Next in importance were the improvements on the Great Peedee, where some \$21,000 was spent in 1823 to 1825. These latter improvements did not include canals, and the river could therefore be used by fairly large steamboats. There were, also, several minor projects of local interest, both in waterways and turnpikes.

The chief road-building project was the "State Road" from Charleston to Columbia. It was planned as a turnpike for most of the distance, with numerous causeways, culverts, embankments, etc. Between 1823 and 1828 nearly \$100,000, in addition to receipts from tolls, was appropriated by the legislature for the furtherance of this project. Toll-gates were established as the sections were completed and were leased to the highest bidders, who were required to keep their sections in repair of all but extraordinary damage. It was a failure almost before it was completed. Apparently it was never in prime condition throughout its length, and the tolls were so high that wagoners preferred the old free roads, with all their sand-beds, mud-holes, and corduroy patches. Appropriations were discontinued in 1829 and the road fell into complete neglect with the news of the success of steam railroads.

For a long period there were no roadways of any sort in southern Georgia. In the upper country conditions were somewhat better. There was a main road from Savannah to Augusta, in tolerable repair. Stages made the trip of 127 miles in 2 days, twice a week, by the use of 6 relays of horses. After the War of 1812 the problem in Georgia was much the same as in South Carolina, though not quite so intense. The State was newer and the pressure not so great for a commercial outlet. Also, Savannah was not so populous, so wealthy, nor so spirited as Charleston, nor was it so actively disposed to further large plans for the stimulation of commerce. The longer-settled parts of the upland, however, rapidly followed their neighbors in South Carolina in urging the State to improve the means of transportation.

The first act for State appropriations to river improvements in a general system, passed in December 1817, provided specific amounts to be expended by local commissions on each of the important streams in the occupied portion of the State; it gave \$5,000 for work on the Savannah River below Augusta, and varying sums for other rivers and creeks in the State which might be rendered navigable; it further set apart the sum of \$250,000 as a permanent fund, the principal to be invested and the interest used for permanent improvements. It was later increased to half a million.

The improvements, however, came slowly and were not especially effective when they did come. A competent engineer was hard to find, and surveys, even of the most general character, were not made. In 1820 an elaborate report was submitted showing the need and the opportunity for a bold system of internal improvements, clearing the water-courses, building canals, and building turnpikes, but no specific recommendations were made. Encouragement was offered to private companies to undertake a system of turnpikes, and State aid was pledged to such companies to the amount of \$7,000, estimated to be one-sixth of the probable full cost of the work, but no company was found to take up the offer.

An act of 1827 authorized Thomas Spalding and his associates to cut a canal or build a wooden railroad from the Ocmulgee to the Flint River, but this was also without success. There were many debates over the practicability of routes into the uplands. Finally, in 1825 a board of public works was established, a State engineer appointed, and systematic surveys were made of the districts where transportation demands were most urgent. Along the fall-line the surveyors reported in favor of a horse railroad with inclined planes, and an attempt was made to locate a canal connecting the Georgia rivers with the Tennessee. This was soon proved impossible, and the engineers turned their attention to turnpikes and railways. The board of public works soon lost favor with the public and was abolished in 1826. The State went back to the policy of river improvements through local boards, by means of State appropriations, and operations on this basis were continued until 1829. There were a few turnpike projects, but they came to nothing, their failure being in the long run an advantage to the State, in that the resources of the State were saved for the railway period.

The improvement of the Savannah River itself was subject to peculiar difficulties. Lying on the boundary-line between two jealous States, it gave rise to many complications. Jurisdiction was in the hands of Georgia, but improvement of the river was from the first contemplated as a matter for joint action, although in any given case the policy of cooperation was treated as a matter of expediency. On the whole, Georgia showed most interest and put the most money into improvements. The prosecution of the Charleston and Hamburg Railway for a time spurred the Georgians to further interest in the possibilities of the Savannah River, but it was subsequently overshadowed by the project of a railroad to Macon, and the legislature lost interest in the plans to facilitate the passage of steamboats to Augusta by the removal of rocks and sand-bars. Meanwhile the Federal Government, by its harbor appropriations, relieved the State of the task of improving the river between Savannah and the sea. The planters and farmers of the upper Piedmont continued for a long time

to demand the improvement of the upper course of the Savannah, but as a matter of fact this could not be done, since by reason of the rapid descents and the frequent heavy freshets, it was not capable of being rendered safely navigable at any reasonable cost. The farmers on the upper river had to wait for the railroad.

ECONOMIC SECTIONS OF THE SOUTH.

From the time when Virginia resorted to tobacco culture and South Carolina to rice, the South has been mainly a group of staple-producing areas, requiring means of exporting their products and seeking the greater part of their miscellaneous supplies from beyond their own limits. The principal transportation problem has always been that of sending the staples to markets abroad and obtaining food-supplies and manufactures from wherever they could be secured. The specific problems have differed somewhat in the various localities and periods, and certain other considerations had at times some degree of importance; but the predominating and fundamental purpose has remained ever the same. Feeling little desire to possess a carrying trade, and leaving to outside agents the external commerce between its own ports and the rest of the world, the South was chiefly concerned in developing a system of internal transportation and commerce by providing communication between the several staple areas and their gateways.

When fully developed in its staple system of the ante-bellum period, the South comprised the following great economic provinces, more or less distinguished by their staples and their natural facilities for transportation:

(1) Lowland and Piedmont Virginia, a tobacco region, gradually encroached upon by the cereals. The transportation problem was simply that of getting products to the navigable rivers and the great Chesapeake. Most of Maryland was an annex to this province, and the Albemarle district in North Carolina was a subprovince tributary to it.

(2) The Charleston-Savannah coast district, with a multitude of shallow waterways to transport the crops of rice and Sea Island cotton to the deep-water harbors at Charleston, Beaufort, Savannah, and Brunswick. This alluvial area was fertile and prosperous from early times, but its people were not content with their narrow bounds and sought energetically in the latter period a means to overcome the obstacle of the pine-barrens which shut them in.

(3) The eastern cotton belt, stretching from the southern edge of Virginia to central Alabama. This province was mainly confined to the Piedmont region, a country of many hills and rapid streams. Its outer edge could be reached by navigation upon a few of the larger rivers, but easy natural means of transportation within the belt itself were wholly lacking. The problem was to send cotton to the coast and get supplies from across the pine-barrens, on the one hand, or the mountains on the other. The first system was that of using as main stems the rivers which crossed the barrens, and supplementing them with a network of country roads radiating from the heads of navigation. For intercourse with the Northwest, caravans across the mountains

were employed, or the circuitous water route by the Mississippi, the Gulf, the Atlantic, and the Carolina and Georgia Rivers. The eastern cotton belt confronted by far the most difficult transportation problem in the South; and not only the local planters, but all the world of commerce, were much concerned in its solution.

(4) The western cotton belt, reaching from Alabama to Texas and sweeping as far north among the Mississippi bottoms as the southern edge of Kentucky, was quite similar to the eastern belt in its all-important product of short-staple cotton; but it was in contrast in point of transportation advantages, for its great reaches of navigable streams extended to nearly every district where the best cotton lands were located. The planters had only to haul their cotton to the river, tumble it over the cliff, and let it await the coming of a boat bound for Mobile or New Orleans. The building of artificial avenues of trade developed later and was less pressing than in the eastern cotton belt. The sugar district of southern Louisiana was part of this province.

(5) The region of Kentucky and middle Tennessee, with its products of tobacco, live-stock, and grain, had a water outlet by way of the Ohio, or the Cumberland and Mississippi, to New Orleans; but it needed an equipment of direct routes to the Atlantic seaboard and to the eastern cotton belt, as well as a local system to supplement the rivers.

(6) The Tennessee-Shenandoah range of connecting valleys, with their fertile limestone soil, producing much the same commodities as the great basin to the northwest, but deprived of their natural advantage of vicinity to the staple belts by the forbidding Blue Ridge, until at length, after many plans and efforts, the mountains were pierced, and a system of railways brought the great wave of prosperity which had so long been awaited.

(7) The peninsula of Florida, afflicted with a barren soil and leading nowhither, was regarded as a negligible part of the economic South—perhaps more an obstacle to the coasting trade than an economic province.

These several provinces in some sections overlapped each other; but generally they were separated by definite barriers, among which the most important were the belt of pine-barrens and the Blue Ridge and the Cumberland Mountains. The pine-barrens were a stretch of sandy, infertile pine-grown country intervening between the coast and the cotton belt throughout most of the latter's extent. The population in the barrens was sparse and self-sufficing, producing no staples for export and making little effective demand for articles from without. The transportation problem was not that of putting the region itself into communication with the rest of the world, but that of crossing the barrier and connecting the coast with the inland cotton areas. The obvious method in the railway period was to build a single trunk-line from each seaport across the barrens, and then to lay out a system of radiating lines in the cotton belt which would gather freight and serve as feeders to the main stem. With the completion of the main stem, remunerative business began and the extension of the road was then a matter of comparative ease.

The Blue Ridge and the Cumberland Mountains, running in great parallel ridges from Pennsylvania to Alabama, sharply divided off the economic provinces in their neighborhood. The flanks of these

ranges were turned by the Potomac and Tennessee Rivers; but the one was hardly navigable at all in the uplands and the other was broken in two by the great obstruction at the Muscle Shoals in northern Alabama; and even if these rivers had been more easily navigable they would still have been inadequate to meet the needs of the situation, for their courses lay in the wrong directions. The greatest need was for direct routes connecting the grain and live-stock producing intramontane valleys and the Ohio basin beyond with the cotton belt, which consumed much of this product of grain and live-stock, and no one was content until that direct communication was at length established by the building of southeast-and-northwest railway systems.

In other regions, where there were no such conspicuous barriers, the factor of mere distance was of considerable importance in creating a demand for transportation facilities, and social, political, and military, as well as economic considerations, required that these facilities should be provided. The configuration of the land directed the currents of commerce, which naturally flowed along the lines of least resistance. The provinces of the South demanded intercourse with one another, with England, Europe, and the West Indies, with Pennsylvania, New York, and New England, and with the great American Northwest. The particular channels through which the volume of commerce should flow, as chosen and developed by the activity of the people, were largely determined by physical environment. There was in some instances a choice of routes, but in no case was the range of alternatives a wide one. Physical geography was imperative in directing the routes; and, even after nature had been apparently conquered by the steam railway, it still continued to play pranks with the fortunes of the cities along the routes. More was needed than a railroad and the survey of town-lots to produce a city, and the land-lookers were frequently at fault in their efforts to found commercial centers.

The strategic points, or centers of trade, as finally developed, had always two features in common: (1) access to the outside world; (2) a tributary area around or behind them. These trade-centers in the South were of several classes. First there were the seaports. Of these, the more important were Baltimore, Norfolk, Wilmington, Charleston, Savannah, Mobile, and New Orleans, each with an adequate harbor and each with an important hinterland. Inferior to these were Beaufort, North Carolina; Beaufort, South Carolina; Brunswick, Georgia; St. Augustine and Pensacola, Florida; and Bay St. Louis, Mississippi, which possessed good harbors, but were cut off from the great hinterland by the unrelieved pine-barrens; and another group, comprising Georgetown, South Carolina; Darien, Georgia; and Apalachicola, Florida, which possessed a river communication with the interior, but no harbor facilities.

In the interior, the principal group of trade centers, in the older parts of the South at least, were those located at the head of navigation or the fall-line on the larger rivers. To these points the planters and farmers brought their output for shipment, and there they procured their miscellaneous supplies. If the boats which carried the freight downstream could return against the current, they would carry cargoes of manufactures, groceries, and salt to the merchants of the fall-line towns. And even if the river craft could not ascend the stream—and this was generally the case before the days of steamboats—the goods would be brought by pack-train or wagon to the point whence the staple had been shipped. It was a great convenience to the producer to be able to sell his crop and buy his goods in the same market. Thus the towns at the heads of navigation grew into marked importance as collecting-points for produce and distributing points for supplies of all sorts. Some of the great planters, it is true, gave their business to factors at the seaports, or even in England; but that practice was customary only among those planters who lived below the fall-line. In the case of the upland producers, before the coming of railroads, the transit of produce to the coast had to be broken at the nearest point where the freight could be transferred from wagon to boat; and this was at the head of river navigation. Those points where the rivers crossed the fall-line were therefore strategic points which had access to the sea, and had each a productive tributary area; the growth of commercial towns in these localities was inevitable. On the Atlantic slope the fall-line towns were Alexandria, Fredericksburg, Richmond, Petersburg, Fayetteville, Columbia, Augusta, Milledgeville, and Macon. On the rivers that flow to the Gulf were Columbus, Montgomery, Shreveport, Nashville, and Knoxville.

In the case of the greater rivers flowing in their navigable course not only from but through fertile districts, there was occasion for subsidiary towns along their courses. Where no one locality along the river course had a distinct advantage over any other, as was the case, for example, along the Tombigbee, the condition was unfavorable for the growth of towns. But upon the Mississippi and its branches the physiographic conditions favored Natchez, Vicksburg, Memphis, Louisville, and St. Louis in their commercial growth even more than location at the fall-lines of a smaller stream could have done.

A fourth group of towns owed their origin to the penetration of the mountain barriers, and owed their growth to the development of a direct trade in food supplies. Thus by the building of railroads Atlanta became the gateway to the eastern cotton belt from the northwest. Chattanooga sprang up at an important crossing of the routes, and the trade of Nashville, Knoxville, Louisville, and Cincinnati was much increased.

At the time when an enlarging interest was being taken in the extension of trade and commerce, engineers and promoters having

fertile imaginations were not wanting to prophesy limitless possibilities of trade expansion for the commercial cities of the Atlantic seaboard. One of these expected Baltimore to attach to herself commercially the Shenandoah Valley and the remaining portions of West Virginia, all of the Ohio east of the Muskingum and Cuyahoga Rivers to Lake Erie, southern New York, all portions of Pennsylvania tributary to the Susquehanna and its branches, the Monongahela and Allegheny Rivers, and the Cumberland Valley. It was asserted that the actual distance by turnpike road from Baltimore to the navigable point on the Monongahela at Brownsville was only 200 miles, while from Philadelphia to Pittsburgh it was 300; from Richmond to a navigable branch of the Kanawha was a distance of 220 miles, and from Charleston to a navigable branch of the Tennessee 300 miles.¹

Before 1818 Baltimore was contemplating the construction of the Chesapeake and Ohio Canal in order to regain the western trade it had lost to New Orleans.² The canal constructed before 1825 would truly have met the efforts of New York to secure the trade of the Ohio Valley and at the same time would have circumvented Philadelphia's projects. It will be shown later why the improvement was never completed.

THE NEEDS OF VIRGINIA.

A committee appointed by the Virginia legislature to investigate the means of communication between the several sections of the State, reported on December 27, 1816, that, owing to the poor roads and defective communications between the eastern and western parts of the State, scarcely a village west of the Blue Ridge and very few along the tidewater from the Roanoke to the Potomac could get their manufactured supplies from the seaports of Virginia. Alluding to the depopulation of the State, the committee confidently asserted the belief that if a connection could be made between the Roanoke, James, or Potomac Rivers and the waters of the Kanawha or Ohio, the emigration could be stopped.³

John Marshall was chairman of the commissioners who investigated the James, Greenbrier, New, and Great Kanawha Rivers.⁴ Their report was to the effect that the New River could be used to ship goods from the east to the west, but not to send western goods to the rivers emptying into the Atlantic. It was advised that by extending the navigation of the James River to the mouth of Dunlap's Creek in Alleghany County and building a turnpike road over the Allegheny Mountains, a large part of the Upper Shenandoah Valley and a part

¹Mills, *Inland Navigation*, 59-60.

²Cf. Ward, *Early Development of the Chesapeake and Ohio Canal Project*, in *John Hopkins University Studies*, XVII, 95-96.

³*Niles' Register*, IX, Supplement, 149, Dec. 27, 1816.

⁴Virginia, *Report of the Commissioners appointed to view Certain Rivers. . . . Conformable to an Act . . . passed the 14th day of February, 1814.*

of the territory west of the Allegheny Front might find a market. Agriculture then would take its place with grazing, the principal occupation of the section. An easy channel of communication between the Ohio and the commercial towns on the James was sought, and with this view the Kanawha was examined. With such a connection made, it was believed that even much of Kentucky would send its produce to market by the James River. It was thought, even then, that the trade of all that part of Kentucky above Louisville and the portion of Ohio whose trade then went down the Ohio could be lost to Virginia only by its supineness or the extraordinary exertions of others. The Potomac, it was said, if connected with the Monongahela, Cheat, or Youghiogheny, was the only route to be feared by Virginia as she contested for this trade. The cost of transportation over the improved James, Greenbrier, and New from Richmond to the mouth of the Kanawha, it was asserted, would not exceed one-half the present cost from Philadelphia and Baltimore.

But the dominant population of Virginia then resided in the lowlands, where the rivers were arms of the sea permitting ocean-going craft to land at the individual wharves of the planters, who were concerned simply in the commerce with Europe. In consequence great commercial cities had not developed. It took time for western Virginia to become so thickly populated as to make its demands for improved transportation facilities heard in the halls of legislation. It was not, it will be seen, until after this period that a readjustment of the representation in the legislature enabled this section to wield an adequate political influence.

THE CHESAPEAKE AND OHIO CANAL.

On May 17, 1786, subscription books having been opened, the Potomac Canal Company was organized, with Washington as president, to undertake the Chesapeake and Ohio Canal enterprise. The act of the Virginia legislature incorporating the company was confirmed by Maryland, and the company was practically representative of the two States. The object of the organization was twofold: (1) to open the channel of the Potomac to Cumberland; (2) to establish connection between Cumberland and the Ohio by means of a road. The company, however, never concerned itself with the second object. In fact, its funds and energy were largely expended near the mouth of the river, where the greatest obstacles to navigation existed. Five miles above Georgetown were the Little Falls and 7 miles higher up the Great Falls. Although a slackwater navigation was the general plan of the company, these two obstacles had to be overcome by canals, including locks of the most expensive character. The work was of such magnitude that the successful completion of the task must be considered one of the engineering triumphs of that age. At

the Great Falls the descent was 76 feet in a space of 1,250 yards. Furthermore, the shore below the falls was crowded by high cliffs, which made a return to the river exceedingly difficult, and the last two locks, by means of which the boats entered the river from the canal, had to be cut out of solid rock. The Little Falls presented a descent of 37 feet, which was overcome by a canal 2 miles in length, including 4 locks. In addition to this, the Potomac Company built a canal of 50 yards and 1 lock at House's Falls, 5 miles below Harper's Ferry, and another canal of 1 mile in length just above Harper's Ferry. At many places the channel was deepened and rocks removed. By 1819 the company had expended \$7,000,000, including stock, toll, and debt, and had, in 1811, paid one dividend of \$30,000.

In 1819, however, the company became bankrupt, as did at one time or other every canal company organized before the War of 1812. The experience of the Potomac Company had, in fact, been exceptionally trying, both because of the physical difficulties to be overcome in the river and because of the clash of conflicting State interests. Federal aid could not be obtained. There was no great commercial center to urge its needs upon Congress, and the old seaports, like Baltimore and Philadelphia, although at a great disadvantage with reference to a natural connection with the trade of the West, instead of yielding to ports more favorably located, were bending all their energies to overcome these disadvantages.

The support of Maryland and Virginia was the only hope of the company, and in this hope they were not disappointed. In 1816 Virginia created a board of public works, which at once advocated the connection of the waters of the Potomac and the Ohio by means of a canal. Three years later the company requested this board to examine the route and to recommend a future policy.¹ In answer to this appeal, the Virginia legislature directed Thomas Moore, the engineer of the board, to examine the waters of the Potomac and the Rappahannock and to explore the country between the Potomac and the Ohio for the purpose of ascertaining the feasibility of connecting the three rivers. In the following year Mr. Moore reported that a canal from Georgetown to the coal-banks above Cumberland was practicable, and estimated the cost at \$1,114,300. In July 1821 a joint committee of Virginia and Maryland recommended that the charter of the company be annulled and a reorganization effected; also that a continuous canal to Cumberland at least should be constructed, and the same engineer was directed to determine its location. Mr. Moore died at the very beginning of the work, however, and the location was determined by his assistant, who reported on December 19, 1822, recommending a canal 30 feet wide at the

¹Shriver, *An Account of Surveys and Examinations, with Remarks and Documents Relative to the Projected Chesapeake and Ohio and Ohio and Lake Erie Canals*, 41.

top, and 20 feet at the bottom, with a depth of 3 feet. The estimate of cost exceeded Moore's estimate by about \$500,000.

With this report as a basis, the Virginia legislature incorporated the Chesapeake and Ohio Company on February 22, 1823. A similar bill, however, failed to pass the Maryland legislature, through the opposition of the interests of Baltimore. The position of Baltimore needs a brief explanation, for this opposition was of long standing. Even before actual surveys of the country between Baltimore and the Potomac showed that the construction of a branch canal between Baltimore and the Potomac was practically impossible because of the difficulty of obtaining a sufficient supply of water at the summit level, the commercial interests of Baltimore clung to the belief that their prosperity lay in the direction of the Susquehanna instead of the Potomac. This was shown in a most decided manner at the time when the location of the National capital was before Congress. In the last stages of that struggle the Maryland representatives from the Potomac area rejected Baltimore and voted for the location on the Potomac. This was just before the election of members to the Second Congress came before the people of Maryland. The interests of Baltimore at once retaliated by placing in the field a ticket known as the Chesapeake ticket, from which they excluded all the members who had voted for the location of the capital on the Potomac. The Potomac interests responded by placing in opposition a ticket known as the Potomac ticket, from which they excluded the members representing Baltimore and their sympathizers; but the voters of Baltimore and the neighboring counties succeeded in electing the Chesapeake ticket.¹ However, when it came to a vote in the State legislature, Baltimore was at a great disadvantage. Although by 1816 the city possessed one-third of the population and wealth of the State, it controlled only 1 vote in the senate and 2 in the assembly, for that was the extent of its representation as provided by the State Constitution, whereas the most sparsely settled county of the State had 4 votes in the assembly and 2 in the senate. This inequality was not changed until a condition² almost similar to that of Dorr's Rebellion in Rhode Island forced an amendment to the constitution in 1837, and this was after the Maryland legislature had voted her millions in behalf of the improvement of the Potomac. If, therefore, Baltimore was to postpone the acceptance of the Virginia act in 1823, it was to be done by winning to her side the support of members of the legislature who did not represent Baltimore.

Having thus met with a check through the opposition of Baltimore, the promoters of the canal again turned for aid to the National Government. President Monroe had shown some signs of yielding on

¹Luetscher, *Early Political Machinery in the United States*, 110.

²This situation is set forth in detail in *Niles' Register*, LI, 320, Jan. 14, 1837.

the constitutional issue over national aid to internal improvements. A convention composed of delegates from Virginia, Maryland, and Pennsylvania met in Washington in November 1823. Although one-third of this delegation came from Maryland, not one represented the city of Baltimore. The convention advocated the immediate construction of a canal from Georgetown to the coal-banks on the eastern base of the Allegheny Mountains and the extension of the canal as soon as practicable to the highest point of steamboat navigation on the Monongahela or the Ohio.

The Virginia legislature reenacted the law of 1823 in January 1824, with slight modifications, and one year later this act was confirmed by the legislature of Maryland, with the express condition that a lateral canal be constructed between the Potomac and Baltimore. No company, however, was ever formed to undertake this work, although the convention that met in Baltimore in December 1825, to consider internal improvements resolved that the State should invest \$500,000 for the purpose, and two surveys were made, one in 1827 and one in 1836. Both showed the scheme impracticable because of the impossibility of obtaining sufficient water at the summit level.

The action of the Federal Government presents a decided contrast to the wavering attitude of Baltimore. On April 30, 1824, President Monroe waived the constitutional objections of long standing and signed a bill appropriating \$30,000 for the purpose of securing the necessary surveys and estimates on the subject of canals and roads, and for two years more than half of this amount was expended on surveys of the Potomac route. The report of the Federal engineers, however, staggered the promoters of the company, for their estimate of the cost of the canal between Georgetown and Cumberland reached the sum of \$8,085,000, which was at least five times the maximum estimate of previous surveys. The company asserted that this estimate was preposterous. Another convention was held in 1826, which set forth the claim that \$5,000,000 would complete the canal. Two engineers were appointed by this convention to make surveys and present estimates. They confirmed the opinion of the convention that the estimates of the United States engineers were extravagant, maintaining that the canal could be constructed for \$3,479,346.93.

A company was organized on the latter basis in 1828, and by 1830, 20 miles of the canal, between Little Falls and Seneca, were opened for navigation. The completion of this part, however, showed that even the estimate of the Federal engineers had been too low, and the canal was not finished until 1850. This was due in part to the discontinuance of aid by the National Government and by Virginia, and in part to competition of the railroads for the aid of Maryland, in which State Baltimore was now backing the Baltimore and Ohio Railroad, as well as her old Susquehanna schemes. The canal and

the railroad had a long fight in the courts over the right to construct the railroad along the north bank of the Potomac between the Point of Rocks and Harper's Ferry. The canal never connected with the coal-mines 25 miles west of Cumberland, the chief objective point of its early promoters, and this failure gave the Baltimore and Ohio Railroad a great strategic advantage, since it had made direct connections with these mines 8 years before the canal was finished.

The figures in table 38 show that at the time of the completion of the canal the Baltimore and Ohio Railroad was already in possession of the Cumberland coal trade. Moreover, in the succeeding years covered by the table, the coal traffic of the canal averaged only about one-third of the entire Cumberland coal trade. This fact is of special significance, since the coal traffic was practically the sole source of revenue for the canal company. In 1871 the total tonnage of the canal was 968,787 tons, and to this the coal-fields contributed 828,998 tons.

TABLE 38.

Year.	Baltimore and Ohio Rail- road.	Chesapeake and Ohio Canal.
	<i>tons.</i>	<i>tons.</i>
1842	1,708	.....
1845	24,653	.....
1850	192,806	4,042
1855	478,486	183,786
1860	493,031	295,878
1865	560,293	343,202
1870	1,112,938	604,137
1875	1,392,237	879,838

Obviously, this limited traffic yielded an inadequate return for the vast sums expended in this enterprise, and consequently no interest was paid on the bonds after July 1864. The only hope of the company rested upon the extension of the canal to the Ohio River, and the managers received some encouragement when, in 1870, the National Government was considering plans for the construction of a central waterway between the Atlantic and the Ohio. But the claims of the Chesapeake and Ohio Canal shared the fate of other claimants, for the whole matter was dropped with the publication of voluminous reports.

THE JAMES RIVER AND KANAWHA CANAL.

At a time when the faith formerly placed in waterways was generally being transferred to railroads as a means of communication, the people of Virginia were engaged in the construction of the James River and Kanawha Canal between the East and the new West—the last of its kind to be built. The idea of water communication between the Ohio and the James Rivers originated with Governor Spottswood in 1716, when he made an expedition to the Blue Ridge, and the first definite suggestion of such a route was made by Rev. James Maury in a letter dated January 10, 1756. Several years before, Washington had urged the commercial and military importance of this plan upon the governor and council of Virginia. In the years 1770, 1772, and 1774 he made tours of inspection “with a view to supply himself with facts which would enable him to show the feasi-

bility, expense, and advantages of this connection.”¹ In the following year an act was passed by the Virginia legislature providing for the improvement of the James and Potomac Rivers. Further progress, however, was postponed by the Revolution.

After the Revolution many schemes for internal improvements were pressed forward. A company with a capital stock of \$100,000 was chartered in 1785 to improve the navigation of the James River,² and it was proposed to connect this with the navigable waters of the Kanawha.³ In 1820 it was superseded by a company organized for the purpose of “clearing and improving the navigation of the James River and for uniting the eastern and western waters by the James and Kanawha River.” By this act the rights and interests of the James River Company were transferred to the Commonwealth, and by an act of February 24, 1823, all the rights, powers, duties, and privileges of the president and directors were conferred on the board of public works, whose transactions were to be in the name of the James River Company.

The old James River Company constructed a canal around the Falls of James River, extending from the city of Richmond to Westham, a distance of about 7 miles, and improved the bed of the river by sluices as high up as Buchanan. The second James River Company, under the direction of the State, enlarged and reconstructed the canal from Richmond to Westham, and extended the same to Maiden’s Adventure in Goochland County, a distance of 27 miles. The company also constructed a canal through the Blue Ridge, 7 miles long, and a turnpike road from Covington to the mouth of Big Sandy River, 280 miles long, and improved the Kanawha River by wing-dams and sluices from Charleston to its mouth, a distance of 58 miles.

On May 25, 1835, the former companies were superseded by the James River and Kanawha Company, organized in accordance with an act passed on March 16, 1832. The State transferred the whole interest of the Commonwealth in the works and properties of James River to the new company in return for three-fifths of the stock. The works of the James River Company were valued at \$1,000,000 and the State received credit for that amount of stock in the new company. The company was further charged with the payment of the annuity of \$21,000 forever to the stockholders of the James River Company, which was equivalent to assuming a principal of \$350,000 at 6 per cent. The existing property was therefore valued approximately at \$1,350,000.

Construction was begun in 1836 and the first division of the canal from Richmond to Lynchburg was completed in 1840. From that

¹James River and Kanawha Canal Company, *The Central Waterline from the Ohio River to the Virginia Capes, Connecting the Kanawha and James Rivers*, 90.

²U. S. Census 1880, IV, *Transportation*, 760.

³Virginia, *Statutes at Large* (ed. by Hening), XI, chap. 44, 525–526.

time to 1856 the canal was continued, as funds were forthcoming, but after 15 miles of the division beyond Buchanan had been put under contract, and after \$10,436,869 had been expended, the work was suspended for want of means to carry it further.

The original capital of the company was \$5,000,000, of which the State paid \$1,000,000 in old works, while as \$73,336 of the private subscriptions were not paid in, the actual available cash capital was reduced to \$3,926,664. All of the funds beyond this amount were either borrowed directly from the State treasury or raised by issuing bonds guaranteed by the State, on which the company was required to pay interest "from the day it was received, before it was expended, and of course long before it began to yield any return." Table 39 shows the sums expended on the various divisions:

TABLE 39.

Lock and tidewater connection.....	\$851,312
First division, Richmond to Lynchburg.....	5,837,628
South-side connections.....	162,685
Rivanna connection.....	115,043
Second division, Lynchburg to Buchanan.....	2,422,556
North River improvement.....	536,551
Third division, work done.....	511,094
Total.....	10,436,869

The money expended in the construction of the works over and above the amount of the cash capital, which was borrowed directly from the State, together with the accrued interest, amounted in the year 1860 to about \$7,200,000. Under this heavy load, with its whole property under a lien to the State, the company was unable to make any further progress with its works. To relieve the company from its embarrassment and to enable it to complete the canal to Covington, the legislature, on March 23, 1860, passed an act to amend the charter of the James River and Kanawha Company, by which the capital stock of the company was increased to \$12,400,000 in shares of \$100 each, and the board of public works was directed to subscribe, on behalf of the Commonwealth, in addition to the shares then owned by the State in the company, for 74,000 shares of the said capital stock. The State shares were declared 6 per cent preferred stock, which dividend had to be paid before the payment of the dividend on other stock. The company was authorized to borrow money to complete the canal to Covington, but the Civil War put an end to such schemes. At the same time the company was authorized to borrow \$750,000 to pay the floating debt and make payment of the debt, but it was discovered that that procedure would leave less than \$130,000 to cover repairs.

This sum was not adequate, and the company at once prepared to present to the National Government the claims of the James River and Kanawha Canal as a "central water-line" connection with the

West. Their appeal came at an opportune moment; for there was a growing conviction that railroads failed to meet the demands of certain regions of the West in transportation of heavy and bulky freight. Resolutions giving expression to this conviction were presented to the National Government by the legislatures of Kansas¹ and Iowa, and by the National Board of Trade.²

In answer to these demands for a national central water-line connection with the West, Congress requested all the companies which had in the past aimed to supply such a connection to present the claims of superiority of their special routes. Congress selected the James River and Kanawha route as the most feasible and inserted a provision in the river and harbor act of July 11, 1870, calling for the survey by the Federal board of engineers. The report of the engineers was submitted to Congress on February 9, 1871. It declared that the completion of a "continuous line of water communication from the waters of the Ohio River, at the mouth of the Kanawha River, to the waters of the Chesapeake Bay and the Atlantic at the mouth of the James River" was entirely feasible; and estimated the cost of construction in round numbers at \$50,000,000. They found that the canal as already constructed had a width at water-line of 50 feet and a depth of 5 feet. In addition to the construction of uncompleted parts, the plans of the engineers included enlargement so as to admit boats carrying 280 tons, which would require a width of 70 feet and a depth of 7 feet.

The engineers held that the demands warranted the expenditure of such a large sum of money. In their report they said:

"The necessity for some such line as this, as a means of cheap and certain commercial intercourse between the great producing regions of the West and the Atlantic coast has long been advocated and urged upon the public attention by various persons and parties of ability and influence. That there now exists no direct line of water-communication between the Mississippi basin and the seaboard is an undeniable fact; and it is equally true that of the two circuitous and indirect routes now in use the northern is subject to interruptions by ice and the southern to a degree of heat highly prejudicial to the preservation of the staple articles of transportation."

In another part of their report they add:

"It has been supposed by some that the day of canals is past. Facts do not sustain this view. . . . When the circumstances are such that slowness of movement is permissible and the quantities to be moved large, the cheapness of the canal becomes obvious to everyone who chooses to consider the statistics of the case."³

Further estimates of the cost of the project and detailed surveys were submitted to Congress by the engineers in April 16, 1874, but

¹Passed Jan. 17, 1873, see *House Mis. Doc.* No. 70, 42d Cong., 3d sess., 1872-73, p. 1.

²Quoted in *Report of Chief of Engineers*, Feb. 9, 1871, in *House Doc.* No. 110, 41st Cong., 3d sess.

³*Ibid.*

these did not differ materially from those presented 3 years before. At this point the interest of the National Government in this enterprise came to a sudden end, and the whole project as a corporate or national enterprise was abandoned. In 1880 the works of the James River and Kanawha Canal Company were purchased by the Richmond and Allegheny Railroad Company, and in the census reports of the same year, the canal is treated as one of the abandoned waterways.¹

NORTH CAROLINA.

North Carolina, after witnessing the depopulation of the State by the removal of many thousands of her people to the West, directed her attention to the study of a remedy. The legislatures of 1815 and 1816 became interested in the opening of new channels of intercourse, the construction of good roads, the opening of the rivers, the improvement of the inlets, the concentration of commerce, and the development of home markets.²

In 1815 definite steps were taken by the general assembly upon the receipt of the committee's report outlining a plan for inland navigation. This report suggested that companies be incorporated for improving the navigation of the principal rivers. These companies were to be entitled to levy toll yielding 15 per cent upon the capital invested. The State was to subscribe one-third of the capital stock and appoint a board of commissioners. The plan was approved by the State senate, but was rejected by the house of commons. Bills incorporating companies for the improvement of the Roanoke and Cape Fear Rivers were passed, the State agreeing to subscribe \$25,000 to the Roanoke Company and \$15,000 to the Cape Fear Company.³

In 1816, upon partial completion of the surveys ordered, the committee on internal improvements reported to the assembly definite views regarding the required improvements.⁴ A. D. Murphey, the president pro tempore of the North Carolina board of internal improvements, issued his memoir in order to inform the newly appointed surveyor, Hamilton Fulton, of Europe, of the improvements contemplated by the State. Before taking up the main question, Murphey described the deplorable commercial condition of the State, and summarized the needed reforms.

North Carolina, we are told, had no commercial city where the staples could be exchanged for foreign merchandise. In consequence, the merchants purchased their goods and contracted debts in Charleston, Petersburg, Baltimore, Philadelphia, and New York. As a result, once a year the State was drained of its cash. The banks, unable to do an extensive business by credits as they would have done

¹U. S. Census 1880, IV, *Transportation*, 760.

²Murphey, *Memoir on the Internal Improvements Contemplated by the Legislature of North Carolina*, Introduction.

³*Ibid.*, 12-13.

⁴*Ibid.*, 14.

in commercial centers, were compelled to circulate their notes. These, collected in other States, were presented to the banks for specie. The result was, the banks were compelled to curtail their discounts and press their dealers, and upon emergencies to suspend payment.¹

By the concentration of the commerce of North Carolina at one or more places markets would be found at home. Debts being contracted at home, the banks could give greater activity to commerce with the issue of a small amount of paper, confining the circulation almost entirely within the State. An effort to concentrate the commerce will be seen to be at the base of the contemplated improvements.²

The interest of the various sections of the State in internal improvements was shown. The counties bordering on the mountains needed good turnpike roads, as they were remote from the markets and had to rely on land carriage. The middle counties were intersected by rivers which could be navigated if obstructions were removed. The counties to the south and east suffered disease and pestilence from their numerous and extensive swamps and marshes, while their finest lands lay neglected. The improvement of the inlets upon the coast interested the entire State, as they would aid in concentrating the scattered commerce.

The inlets at Cape Fear and Ocracoke were the most favorably situated for the purpose. The one at Cape Fear was very important, for by using the tributaries of the Cape Fear River two-thirds of the trade of the State could be made tributary to it. Wilmington had long been the shipping port, but an eddy which formed 20 miles below where the tidewater met the current of the river caused vessels drawing more than 11 feet of water to lighter at the flats there formed, and subjected commerce to an increased expense. Wilmington was also most unfavorably situated on the east side of the river. The exhalations from the extensive swamps to the west so destroyed the health of the inhabitants as to compel them to seek the seacoast for a part of every summer and autumn.

Smithville, situated near the mouth of the river, was suggested as the shipping center, for, with its finely protected harbor, it could take care of all vessels entering through the inlet.

The only inlet then presented for the shipments from the Roanoke, Tar, and Neuse was that at Ocracoke. This was very inconveniently situated in reference to the Roanoke, as a voyage from the head of the Albemarle Sound to Ocracoke was considered equal to one from Ocracoke to New York or the West Indies. The navigation off the

¹Murphey, *Memoir on the Internal Improvements Contemplated by the Legislature of North Carolina*, 7.

²Murphey's *Memoir* showed: (1) internal condition of North Carolina; (2) her advantages for foreign commerce; (3) her commerce with neighboring States; (4) commerce that is employed for buying and selling commodities for home consumption; (5) a view of what the legislature had done; (6) a view of what the legislature should do.

coast at Ocracoke was so dangerous and the channel across the bar so variable that camels had been suggested for conveying the merchandise to a point from which ocean navigation would be safe.¹

The above-mentioned difficulty caused the board to investigate the possibility of opening either an inlet at the lower end of Albemarle Sound or else a communication by navigable canals from the Roanoke to the inlet at Beaufort or Swansborough. By this means the commerce of the Roanoke, Tar, and Neuse Rivers might be concentrated at one point.

Opening the inlet at the lower end of Albemarle, it was found, would not only be very expensive, but subserve the trade of only the Roanoke, and, therefore, the plan of concentrating the trade at Beaufort by a series of communicating canals was taken up.² The series included navigable canals commencing on the Roanoke at or near the town of Williamston and extending to the Pamlico at Washington, thence across to the Neuse by way of Blount's and Swift's Creeks on to the bay at Beaufort. The canals would collect the produce of the rivers running into the Albemarle and Pamlico Sounds and concentrate it at Beaufort for shipment. This could be done quickly and safely, as steamboats could be used in the sounds, on the Roanoke to Halifax, on the Tar to Tarborough, on the Neuse to Smithfield, on the Chowan and Meherrin to Murfreesborough, and on the Pasquotank to Elizabeth.

Surveys were directed to be made of the sounds on the coast, as it was thought that by making a cut of a few miles the sounds could be united with Cape Fear. Similar cuts made northward would form an easy channel of intercourse between North Carolina seaport towns and those of Virginia and Maryland.

By 1819, the legislature had granted charters to companies for the improvement of the Roanoke, Yadkin, Catawba, Broad, Tar, Neuse, and Cape Fear Rivers and subscribed stock in all the companies except that of the Broad. Owing to the fact that the Roanoke with its branches, the Dan and the Staunton, traverses Virginia also, the legislature of that State had given a company a charter, hoping "to divert the trade to Norfolk."³ The produce of the counties tributary to the upper branches of the Tar River was wagoned to the markets of Virginia. Improved navigation would enable this produce to be brought to Washington, the port of entry on the Tar, and the place most favorably situated for carrying commerce through the Ocracoke inlet. The upland cotton, tobacco, and wheat grown on the Neuse above Smithfield were also wagoned to Virginian markets, and this prevented Newbern from becoming a commercial center. If the navigation of this river could be improved as far as Hillsborough, it seemed possible for Newbern to recover the trade from Virginia.

¹Murphey, *Memoir on the Internal Improvements Contemplated by the Legislature of North Carolina*, 25.

²*Ibid.*, 29.

³*Ibid.*, 34.

On the Yadkin or Peedee resided one-third of the white population of the State, and \$2,000,000 worth of cotton, tobacco, and wheat were said to be raised for exportation yearly. With the Peedee rendered navigable to Wilkesboro, it was thought that a considerable trade of the neighboring counties of Virginia and possibly of East Tennessee would be attracted. To draw trade to North Carolina, a turnpike road from Wilkesboro across the mountains towards Abingdon was planned.¹

THE SANTEE IMPROVEMENT.

To understand both the development and the lack of development of transportation in this section, one must understand the dominating position of the most important city, Charleston. The public policy of the State was entirely controlled by the city. Other localities might make feeble demands, but, to be effective, every important demand must either be the demand of Charleston originally or secure the full support of that city. The most important example of this was the case of the Santee River improvement. This river, which drains the whole of the central South Carolina uplands, and whose lower course offered splendid soil to attract the planters, had a most inconvenient lack of harbor facilities at its mouth. The river empties into the ocean through a swampy delta, some 50 miles northeast of Charleston. The mouths of the rivers are choked by a shallow bay, as is also the entrance to Winyaw Bay, lying northeastward. The string of sea islands in the direction of Charleston is broken at several places, and the protected waterways are accordingly not continuous. The Santee boats were obliged by turns to navigate shallow waters and risk the perils of the ocean.

A desire to relieve this hardship on transportation prevailed from early times, but so long as it remained a strictly local problem, conditions were not conducive to its solution and not until after the achievement of independence and the rise of new economic problems did Charleston become decisively interested in securing closer connection with the Santee River. From 1750 on, settlers had been entering the South Carolina uplands and establishing themselves as small farmers, producing grain and live-stock. If the Santee could be connected with the seaport the downward navigation would furnish an economical outlet for the surplus produce of these farmers, encourage them to increase their product, furnish the cheaper food supplies that Charleston much needed, and add to the city's trade. Charleston itself felt the depression among the low-country planters, following the ruin of the indigo staple trade and the lessened demand for rice after the Revolutionary War. Labor was cheap, because the profits from slaves were decreased, and there was some floating capital

¹Murphey, *Memoir on the Internal Improvements Contemplated by the Legislature of North Carolina*, 38.

available. Canals had become a demonstrated success in England and the time was propitious for a large canal project in South Carolina.

The winding course of the Santee River approaches within 50 miles of Charleston, at a point due north from the city, and there turns east and southeast to reach the ocean at a point some 50 miles from Charleston Harbor. In February 1786, Chancellor Rutledge presented to the legislature of South Carolina a petition for chartering a company to open a canal between the Santee and Cooper Rivers, the cost of the enterprise to be divided into 100 shares of indefinite par value. The greater number of these shares, the chancellor said, had already been subscribed for, and the charter was granted shortly afterward. Under it a chief engineer was appointed, and preliminary surveys showing several routes were made. An interesting provision of the charter was that prohibiting the company from collecting tolls in any year in excess of 25 per cent net profit upon the capital expended in building the canal. The principal engineering problem was to secure a sufficient water-supply for the high level at the crossing of the Santee ridge. A minor one was to avoid crossing the rice-fields of the planters in such a way as to cut off their water-supply. A route was finally chosen running west of north and reaching the Santee River some 3 miles west of Pineville. Water for the summit level was to be secured through ditches from reservoirs on slopes several miles away.

Trouble and dissension among the stockholders caused some delay. Active work of construction was not begun until 1792, after a partial reorganization and an increase in the number of shares. A large number of prominent citizens of the State subscribed for stock, and the progress of the work was a matter of widespread interest. Economic conditions in 1792 were very favorable to the undertaking, since plantation industry was at its lowest point of profitability. Gangs of prime slaves were occasionally sold for less than \$200 per head, and buyers were few. Planters were anxious to find employment for their slaves which would be more profitable than that upon plantations. They therefore welcomed the bid of the Santee Company for labor, and supplied as many able-bodied men and women as the company could afford to hire. Digging was begun at both ends of the canal, but progress was much slower than had been anticipated. The laborers were stupid and not well managed and the methods of work were primitive. By the beginning of 1797 it was seen that the work would be much heavier and more costly than had been expected. Meanwhile, the rise of the new cotton industry was diminishing the supply and raising the price of labor. In order to provide additional funds, the legislature established a lottery for the benefit of the company. At the end of 1795 about 5 miles of the excavation had been completed and several locks were under construction. The directors of the company redoubled their efforts to

push the work to early completion, offering large pay for laborers and for the more skilled workmen. The resources of the company were strained in meeting the cost of wages and supplies for the 600 laborers employed, but the end of the year, in spite of every effort, failed to see the canal near completion.

Within the next year some of the canal stockholders refused to meet the recurring assessments. The rule of the company was that any default in promptly meeting assessments would cause a forfeiture of the stock. The annual meeting of the stockholders in February 1798, however, resolved that since the expense of the canal had already exceeded every estimate, the enforcement of the forfeiture rule would be highly inexpedient. They provided that any person in arrears for requisitions prior to 1798 might consolidate his payments into shares paid up to date at £71 each and thereby avoid forfeiture, on condition of paying in each case the £10 assessment for January 1798, within 60 days after the date of this resolution.¹ Assessments were kept up and the work of construction continued until in July 1800, the canal was completed with all its locks and reservoirs, and a boat laden with salt at Charleston passed through and carried its cargo unbroken to the town of Granby, at the foot of the rapids on the Congaree, just below Columbia.

The building of the canal had consumed 8 years of actual work and about \$750,000 in money. The amount of capital invested was so large that there could be no prospect of a high rate of dividends from tolls. The later requisitions on stock had been paid by the subscribers merely to save the early payments from being a total loss, and to further an enterprise which was expected to prove a public benefaction. The burden on the stockholders was in many cases more apparent than real, for many of the subscribers of stock were also leasers of labor to the company at profitable rates and received in wages for their negroes more than they were paying as stockholders.

The canal's expected usefulness in the commerce with the interior, especially in foodstuffs, was never achieved. The rise of the cotton industry in the uplands checked the growth of cereal production and, by giving a local market for the whole output, stopped all shipment of grain to the coast. The yield of cotton in the place of grain was far lighter in weight and more precious in value. It could bear the cost of transportation by land, while grain could not have done so. The frequent delays from mishaps or from the shallowness of streams, the danger of wreck, and the excessive slowness of the upward trip by boat, all lessened the advantage of the water system and promoted the use of wagons. The introduction of steamboats upon the rivers, however, tended to increase the patronage of the canal, and this increase of traffic continued until the period 1840 to 1850, when rail-

¹*Charleston City Gazette*, March 7, 1796, Letter of "A Friend to Inland Navigation."

roads began to compete for the traffic of the district drained by the Santee River. The canal receipts then rapidly declined, until by 1850 the tolls barely covered the cost of maintenance. In 1858 the canal was abandoned.

Other schemes for the improvement of transportation in the South Carolina lowlands were of minor importance; while those on the Georgia coast and in the Cape Fear district were of even less consequence. A few roads and causeways were built, but unimproved natural waterways were the principal means of transportation.

Transportation into the Carolina uplands, in the case of most routes, was along the water-courses that entered the mountains from the north. The conquest of the Piedmont was a squatter movement, largely ignored by the Government, and the settlers in that region developed a self-sufficing economy in isolation from the rest of the world. About 1760 a few paths were found radiating from points in the middle country to various parts of the uplands. The availability of the river systems, especially the Santee and the Savannah, had the effect of dwarfing the importance of the points whence the roadways radiated. Orangeburg and Williamsburg had merely a fork-in-the-road position and did not long remain even on the main roads to the distant interior. The navigable river-courses dominated the situation, directing the currents of traffic and promoting the rise of commercial centers at the points where their navigation was broken. The road system of the middle country soon became subsidiary to the rivers, with the chief function of putting Charleston and Savannah in touch with the points at the head of navigation by land as well as by water. In the uplands, the roads were developed mainly in a system radiating from these same strategic points on the rivers.

CHAPTER IX.

TRANSPORTATION IN THE MIDDLE WEST BEFORE THE RAILROAD ERA.¹

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THE CANAL AT THE FALLS OF THE OHIO.

It is difficult to determine just when the agitation for canals began in the Ohio region, but it seems to have begun almost with the first settlement of the territory. The attention of the earliest settlers was directed to canals by the obstruction to the navigation of the Ohio at Louisville. As has already been shown, the falls at this point barred traffic up and down stream, and by seriously interfering with the marketing of products retarded the development of the Ohio region. The falls were difficult at all times, and at certain seasons impossible to navigate, not only for the early craft, but at a later period also for the steamboat. Except at high water they constituted an impassable barrier for the steamboat and prevented the development of steamboat navigation along the whole course of the river.

In 1817 the first steamboat from New Orleans reached Cincinnati at a time when the river was extremely high, and this event was made an occasion for speculation as to the benefits that would accrue to the people of Ohio if such boats could navigate the river at all seasons of the year.² It was estimated that 5,000 flatboats passed over the falls each year, and at least 3,000 of them required pilots to go safely through the rapids.³ The annual outlay for pilotage amounted, therefore, approximately to \$15,000 for this class of boats alone.⁴

Many projects were advanced for constructing a canal around the falls and every suggestion was enthusiastically received by the people of southern Ohio. In a number of instances the early companies organized for this purpose asked for stock subscriptions and these were quickly given. The first company of any importance was the Jeffersonville Canal Company, incorporated by the State of Indiana. Shares of stock were issued and committees were appointed in Cincinnati and other cities of the Ohio Valley to solicit subscriptions. There had been from the first much dispute as to the respective advantages of the Indiana and of the Kentucky side of the river for a canal; many investigations and several surveys had been made,

¹This chapter, except for the part dealing with lake traffic prior to 1850, is compiled from Gephart, *Transportation and Industrial Development in the Middle West*, 107-128.

²Drayage at 75 cents per ton. Ships were compelled to unload at Louisville and to have their cargoes hauled around the falls.

³*Liberty Hall and Cincinnati Gazette*, March 12, 1817.

⁴*Ibid.*, Jan. 6, 1826.

but no unanimity characterized the reports on these routes. On the contrary, one side or the other was favored, according as the friends of the one side or the other had been more influential in making the appointments.

In 1820 a commission consisting of one representative each from the States of Ohio, Virginia, Kentucky, and Pennsylvania reported to the legislatures of these States, unanimously recommending the Kentucky side.¹ Indiana immediately appropriated \$10,000 to complete the work on the Jeffersonville Canal, but Kentucky soon appropriated \$100,000 for the purpose of constructing the Portland Canal, on the Kentucky side.

The people of Ohio were now urged to assist Kentucky, although previously to this they had been accusing the people of Kentucky (especially those of Louisville) of insincerity in their efforts to secure a canal around the falls, it being quite obvious that Louisville was enriched each year by the revenue from storage, by transfer charges, and by other gains incidental to the delay and the break in transportation at the falls.²

Although some subscriptions had been paid by the people of Ohio to the Jeffersonville Canal Company, the greater part had been withheld. The charter of the Kentucky company, however, failed to win the approval of Ohio subscribers, on account of its specifications as to the kind of a canal to be constructed; nor was the Indiana charter wholly satisfactory, since it provided a bonus to Indiana as a return for granting the charter. The people of Ohio who were interested in the project therefore concluded in general that nothing further ought to be done until a competent engineer had examined the two locations and had reported upon the cost. They had almost concluded that the cost would be too great for a private undertaking and they now proposed to prove to the National and State governments that the work could be executed and then to ask these governments to do the work.

In the session of the Ohio legislature of 1820³ the house passed a bill which authorized the governor to employ an engineer to make surveys on both the Indiana and the Kentucky sides and to furnish an estimate of the cost of each canal. The senate agreed to this bill, but Governor Brown, in a later message, said that he had looked for such an engineer in New York "where they were having such services, but could not find one."⁴ He asked that the authority to make the appointment be continued and extended to include the surveys and cost of a canal from the Ohio River to Lake Erie. Finally, by aid of the National Government, a canal was secured around the falls at Louisville in 1828. Thus it was 40 years after the settlement of Ohio that the greatest single obstruction to the successful commercial navigation of the Ohio River was removed.

¹*Liberty Hall and Cincinnati Gazette*, May 27, 1820.

²*Ibid.*, March 25, 1818.

³Ohio, *Laws*, 1820-21, chap. xiii, 20.

⁴Ohio, *Ex. Doc.*, 1822.

OHIO CANALS.

Before this time the people of Ohio had become interested in the State canals. The first legislative mention of canals was in 1812, when John McIntire was empowered to build a dam across the Muskingum River and to conduct the water by a canal to a point below the Falls of the Muskingum. This canal secured water-power for mills and greatly improved the navigation of the stream.

In reply to a request from the legislature of New York that Ohio aid and cooperate with New York in securing a canal from the Hudson River to Lake Erie, the Ohio legislature in 1812 passed a resolution which expressed the opinion that Congress ought to build this canal:¹

“This means of communication would have the most extensive and beneficial effects by facilitating the intercourses between remote parts of the United States, diminishing the expense of transportation and thereby rendering the produce of our country more valuable, the price of foreign commodities cheaper, and its tendencies would be to encourage agriculture, manufactures, internal commerce, and to strengthen the bond of union between the States.”²

This was no doubt sincerely enacted, for production had been so long retarded by the unsatisfactory market at New Orleans and the high cost of reaching the expensive markets of Philadelphia and Baltimore that the people of Ohio rejoiced at any promise of relief. The first official mention of the Ohio-Erie canals was in the message of Governor Brown in 1818, although his predecessor, Governor Thomas Worthington, had, in correspondence with the Secretary of the Treasury (William H. Crawford), pointed out the feasibility and desirability of a canal between the Ohio River and Lake Erie.³ After the receipt of Governor Brown's message, the matter was taken up in both houses, and in December 1818 the senate reported a bill to incorporate a company to construct a canal between Lake Erie and the Ohio River. This bill was not acceptable to Governor Brown and did not become a law. The senate offered a resolution in the same year providing for a joint commission of both houses to prepare a bill authorizing the governor to employ engineers to survey four routes for a canal between Lake Erie and the Ohio River. This bill also failed to become a law.

Although the governor, the senate, the house, and the people wanted a canal, no bill could be passed to authorize a survey of routes. The governor urged the matter by frequent messages to the assembly; the senate would pass one bill, the house another, and no agreement would be reached. Meanwhile the people were complaining on account of the lack of transportation facilities. Finally, after four years of resolutions, messages, and committee meetings, by a combina-

¹Ohio, *Laws*, 1812, pp. 197-198.

²Congress had refused to aid New York in constructing the canal.

³Ohio, *Senate Journal*, 1817, p. 13.

tion of the friends of the canals and the supporters of an educational measure, a law was passed January 31, 1822, which authorized the governor to employ an engineer and to appoint a commission to make surveys and furnish estimates of the cost of a canal.¹

The United States Senate had, however, in 1820, reported a bill

“To appoint a commission to examine the country between the Sandusky and the Miami Bays of Lake Erie and the navigable waters of the Scioto and Great Miami Rivers of Ohio, and to ascertain whether and by what routes a canal should be laid out, and, if practicable, to determine and lay out the route of such a canal.”

But much opposition “to starting improvements in the backwoods” was encountered, and the bill was rejected by a vote of 26 to 13. The people of the West said that the defeat of this bill was only in keeping with the general practice of preventing the West from deciding how any of the public moneys should be spent.² The same bill was again introduced in 1821, and after meeting the same objection was again defeated.

The advantages which the people of Ohio thought would result from these canals are indicated by the report of the committee to which Governor Brown’s message of 1822 was referred. It was pointed out that because Ohio produced mainly the great commercial staples, the New York market, on account of its capital, tonnage, commercial situation, and climate, was preferable to that of New Orleans.³ A trader who arrived in New Orleans in the spring with a cargo of flour, wheat, pork and other Ohio products usually found the market overstocked. To leave his property would mean to lose it, and to wait for a higher price would usually involve the loss of the greater part of it through spoiling. He was thus forced to sell his products at a sacrifice, often receiving only enough, or sometimes less than enough, to pay transportation charges. During the season of 1818–19 there were received and inspected at Cincinnati alone 130,000 barrels of flour, which at this time sold in Cincinnati at \$3.50 per barrel and in New York at \$8 per barrel. The cost of shipping by canal to the latter market would be \$1.70, thus making a saving of \$2.80 a barrel, which would mean a saving of nearly \$375,000 on the total amount sent to Cincinnati.

Again, it was pointed out that while the Scioto Valley then produced enormous quantities of flour, wheat, corn, and pork, production would be many times increased if better means of transportation could be secured. The commissioners argued that most of the imported goods and those manufactured goods of the eastern States bought for Ohio, Indiana, Kentucky, Illinois, and Missouri would be

¹Ohio, *Laws*, 1822, chap. xxvi, pp. 31–33.

²*Liberty Hall and Cincinnati Gazette*, May 17, 1820.

³Ohio, *House Journal*, 1822.

purchased in New York and sent by way of the Ohio canals. Such practical arguments appealed strongly to the people of the regions affected, and the enthusiasm engendered by the prospect became unbounded. The Erie Canal was nearing completion, and this made it possible to secure the services of an excellent engineer, James Geddes, to work with the commission appointed in 1822. Later, when other employees were needed, these too came from the Erie Canal.

The commission appointed in 1822 reported in January 1823, and found each of the following routes practicable:¹ (a) the Cuyahoga and Muskingum route; (b) the Black and Muskingum; (c) the Grand and the Mahoning; (d) the Scioto and the Sandusky; (e) the Maumee and the Great Miami. They reported that canals had great advantages over any other mode of conveyance; that the agricultural produce of the country would be quadrupled, and that other bulky products, such as the gypsum of Sandusky, fishery products from the lake, and coal, would be transported by the canal; that manufacturing would rapidly increase in Ohio, since coal, iron, wool, and flax were either found in abundance or could be produced when needed. They pointed out that stone and lime for the construction of locks would probably be found along each of the proposed routes. The committee recommended that funds be secured by applying to Congress for the right to sell 700,000 acres of school and salt lands on the condition that the funds from the sale of the school lands should be guaranteed by the State to return 6 per cent for the support of the schools of the State.

A difficult problem was now presented for solution. Every section through which a canal could be built demanded that its interest be considered in selecting the route. Some compromise was necessary if a canal was to be constructed. Manifestly the sections of dense population must be supplied with a canal or the project would be defeated by the votes of the neglected sections. The canals must be located, not for the future needs but for the present ones, and not chiefly because of their importance as through transportation routes, but as local routes.

The three most natural routes for a canal were: (a) down the Maumee River by way of the Great Miami River to Cincinnati; (b) down the Cuyahoga River by way of the Scioto River to Portsmouth; and (c) down the Cuyahoga River by way of the Muskingum River to Marietta. The canals then authorized embraced not one of these routes, but portions of all of them. At this time the three most densely populated sections of the State were the northeastern, the central, and the southwestern. At first it was proposed to start the canal in the northeastern part of the State, to run it in a southwesterly direction, and to terminate it at or near Cincinnati. But

¹Ohio Board of Canal Commissioners, *Report*, 1823, pp. 1-2.

this route was found impracticable and nothing was left save a compromise between the sections. In order to satisfy the northeastern and central sections, a canal was provided which was to begin at Cleveland, run south to the divide, then west to the Scioto, and thence through the center of the State to the Ohio River at Portsmouth. To secure the support of the densely populated section of the southwest, a canal was located from Cincinnati to Dayton, with the promise that it would be extended to Toledo. Thus the sectional interests were served and at the same time the economic demands were in a large way satisfied.

It was in some respects unfortunate that such an extensive system had to be planned then, for if the State could have constructed only the one canal from Cleveland to Portsmouth by way of Columbus, it would have reached what were the chief agricultural sections of population and at the same time it would have afforded a transportation route for the through Lake Erie and Ohio River traffic. If the Muskingum and the Great Miami Rivers had then been improved, these three routes would have given to Ohio an inland system of water transportation which would have gone far to satisfy the economic needs of the State.

It was detrimental to some of the States that New York had selected a route and constructed a canal which from the first proved such a commercial success. This was due to the importance of New York as a foreign commercial port, to her manufacturing, and to the fact that through this canal she could reach the central States, which produced a great surplus of raw products. The people of other States had not learned to discriminate between canals. They assumed that what had been found true in the case of one canal could be predicted of all, and thus was started again the mania for canal construction which, before it had run its course, placed a heavy burden upon the resources of many States, for many of these canals proved financial failures.

The act providing for the Ohio canals passed the legislature in 1825 by a vote of 92 to 15.¹ The same year which saw the beginning of the work on the canals witnessed the extension of the National Road through Ohio. At the same time there began a renewal of the agitation for the building of State, county, and township roads. The National Government spent at this time \$70,000 on the improvement of the Ohio River. The canal around the falls at Louisville was also in the course of construction, and the outlook for the people of Ohio was most encouraging. Transportation facilities commensurate with the needs and producing ability of the region gave promise of being supplied within a few years. Yet not a few objections were heard to the canal policy of the State. Some were opposed to it because they

¹Ohio, *Senate Journal*, Feb. 4, 1825.

did not derive any direct advantages from the canals, some because they thought that the canals would injure their lands¹ and subject them to the association and annoyance of an undesirable class of citizens. Some said the State would be forced to borrow so much money that the debt would never be paid; that the canal project was a sectional measure; some objected to being taxed to pay any part of the sum required for the construction of the canals. They desired that the whole cost be defrayed from the proceeds of loans to be paid by the returns from tolls on the canals, or that those who were directly benefited by them should pay the cost without any general State tax being levied.²

In the northeastern section of the State the trade was chiefly with Pittsburgh. The wagons from Ohio would haul butter, cheese, pot and pearl ashes, beeswax, feathers, and other products to Pittsburgh and return with the manufactured goods of Pittsburgh or the foreign merchandise which had been brought there. Pittsburgh was, however, complaining in 1825 that she was losing her trade³ and urged that a canal be constructed from Pittsburgh through Ohio to Lake Erie. By 1826 Pennsylvania had expended \$16,000,000 on canals, turnpikes, bridges, and public works, and at this time plans for additional large expenditures were being drawn up in an effort to retain a share in the growing western trade which the success of the Erie Canal was giving to New York.⁴ The cost of sending goods to Ohio from New York by way of Philadelphia and Baltimore was from \$3 to \$4 per 100 pounds, although from New York to Sandusky it was only \$1.25 per 100 pounds.⁵ The opening of the Erie Canal meant a wider market to the people of Ohio, and this denoted an increased production and higher prices for domestic products and greater comforts and conveniences for the people of the State. After the two main Ohio canals were provided for, there were numerous projects for the construction of minor canals, of which many were lateral canals to the two main routes. In 1833 the two original canals were finished, although the canal system of Ohio was not completed until 1846, when Ohio had 813 miles of canal and slackwater navigation.⁶

By the provision of the act of February 4, 1825, a board of canal commissioners was appointed to have general supervision of the canal fund, which was to consist of such appropriations, grants, and donations as might be made by the State and individuals, of moneys raised by the sale of stock, and of the taxes specifically pledged by the act for the security of the payment of interest upon the canal stocks.⁷

¹*Liberty Hall and Cincinnati Gazette*, March 12, 1825.

²*Western Courier and Western Public Advertiser* (Ravenna), March 22, 1825.

³*Ibid.*, Oct. 15, 1825.

⁴*Ibid.*, Feb. 4, 1826.

⁵*Cincinnati Gazette*, Sept. 10, 1827.

⁶*Western Courier*, Feb. 4, 1846.

⁷*Cf. Morris, Internal Improvements in Ohio, 1825-1850*, in *American Historical Association, Papers*, 1889, III, 111, for general financial arrangement.

OBSTACLES ENCOUNTERED.

Ground was broken at Licking summit for the Ohio Canal July 4, 1825,¹ while work on the Miami Canal was begun July 21.² Morris summarizes the history of canal construction in Ohio as follows;

- (1) A greater cost of quarrying the stone for the canal than estimated.
- (2) The soil being gravelly, the water leaked out as fast as let in from the feeders and reservoirs,
- (3) The spring floods undermined the piers at the aqueduct over Mill Creek, while ponds, overflowing the canal, had to be drained.
- (4) The sickness and fevers of 1827 frightened canal laborers away, while the contemporary construction work on the Pennsylvania Canal and the National Road drew heavily on the labor supply.
- (5) In 1826 some of the contractors absconded with money, leaving workmen unpaid.
- (6) Laborers were paid in depreciated currency.
- (7) Overabundance of bids for the constructive work occasioned such underbidding that many sections were taken by contractors at a loss, thus occasioning the use of poor material and often misappropriation of funds.
- (8) The inhabitants raised the prices of supplies and often were in collusion with dishonest men in the securing of contracts.

The canal commissioners were authorized not only to sell surplus water-power, but to select and purchase, for the State, sites where water was abundant in the vicinity of the canal. This being done at Massillon, Akron, Cleveland, and Chillicothe, the State became the owner of a number of acres of land and town lots.³ The unforeseen and disastrous additional expenses soon exhausted the State funds and necessitated a too rapid sale of the school lands. The loaning of the county's funds secured thereby to the State placed the State largely in debt to the counties,⁴ rolling up by 1825 a school debt to the counties amounting to \$579,287.09,⁴ and eventually from 1826 to 1833 a gradual increase in taxation.

In November 1825, the initial year in canal construction in Ohio, from 1,500 to 2,000 laborers were employed on the northern division of the Ohio Canal alone.⁵ Many of the laborers were Irishmen or Germans who entered Ohio from other States in order to work on the canal. Cities sprang up. Akron, Ohio, arose from a group of shanties occupied by Irishmen who worked on the Ohio and Erie Canal. During the first few years the laborers were paid 30 cents a day, with plain board and shanty lodgings.⁶

In 1828 the great demand for laborers in the canal works of neighboring States, especially Pennsylvania, caused a rise in the price of

¹Various accounts of DeWitt Clinton and Mr. Lord's attendance upon the celebration of the beginning of the Ohio Canal system may be found. See Mott, *Story of Erie*; Atwater, *A History of the State of Ohio*, 263-273; *Niles' Register*, XXVIII, 346, July 30, 1825.

²On the methods of construction of the Ohio canals, see McClelland and Huntington, *History of the Ohio Canals*, 22-29.

³Morris, *Internal Improvements in Ohio, 1825-1850*, pp. 112-115.

⁴*Ibid.*, 121.

⁵*Niles' Register*, XXIX, 83, Oct. 8, 1825.

⁶Howe, *Historical Collections of Ohio*, II, 324.

labor as well as supplies. On the Pennsylvania Canal 5,000 hands were at work in August 1828 and more laborers were wanted at \$12 to \$15 a month.¹ The Ohio board of public works reported, in January 1844, that the high prices of labor and provisions in the northwestern part of Ohio in the years 1837 to 1840 largely increased the cost of construction of canals.²

EXTENSION OF THE OHIO CANAL SYSTEM.

While the Miami Canal was not thoroughly completed until the locks at Cincinnati were finished in 1834,³ the arrival of a fleet of canal-boats at Cincinnati, on March 16, 1828, announced that the canal was ready for business.⁴ Upon June 15 and 16 there arrived at Cincinnati by the canal 276 barrels of whisky, 531 barrels of flour, 100 barrels of corn, and 100 barrels of corn meal. This increased commerce was also augmented by increased steamboat arrivals at Cincinnati.⁵ With the Miami Canal completed only to Dayton by 1830 and with the slow extension of the Maumee Canal from Lake Erie southward to meet it, the central portion of western Ohio was still unprovided with easy communication to the Ohio River or Lake Erie.⁶

The Miami and Maumee Canal was planned to connect with the great Wabash Canal when this latter canal was completed. The Cincinnati and Whitewater River Canal, connecting with the Whitewater Canal of Indiana at the State line a half mile south of the town of Harrison, was expected to direct the trade of southeastern Indiana to Cincinnati. The surplus undisposed of there or demanded elsewhere could be sent to Lake Erie and thence to Montreal or New York, to Pittsburgh and east, into interior points of Ohio, or to the southwest. Many side-cut canals auxiliary to the main Maumee and Miami were planned and some executed, as towns like Lebanon found themselves too remote from the main communications to Cincinnati or to Lake Erie.⁷

With the main Ohio Canal from Cleveland to Portsmouth completed in 1832, a canal course was made south through the counties of Cuyahoga, Portage, Stark, and Tuscarawas; then west to Roscoe in Coshocton County; thence southwest through the counties of

¹*The Civil Engineer and Herald of Internal Improvement*, Aug. 16, 1828, in Kilbourn, *Public Documents concerning the Ohio Canals*, 129.

²Ohio Board of Public Works, *Annual Report*, 1844, p. 11. See McClelland and Huntington, *History of the Ohio Canals*, 26-30, as to payment of laborers, salaries of engineers, etc.

³Atwater, *A History of the State of Ohio, Natural and Civil*, 274.

⁴*Niles' Register*, XXXIV, 122, April 19, 1828.

⁵*Ibid.*, XXXIV, 284, June 28, 1828. "Between November 1827 and June 18, 1828, 733 arrivals of steamboats are recorded at Cincinnati, of which 354 were from Louisville, 228 from Pittsburgh, and 41 from New Orleans."

⁶The Miami Canal was extended from Dayton to the junction of the Maumee and Auglaize Rivers by 1836. McClelland and Huntington, *History of Ohio Canals*, 37.

⁷Atwater, *A History of the State of Ohio, Natural and Civil*, 278; *Niles' Register*, XL, 307, July 2, 1831, states: "In March and April last, about 58,000 barrels of flour, 7,000 do. whiskey, 12,000 do. pork, 18,000 kegs lard, 750 hhds. of hams, and 1,800,000 lbs. bacon, passed down the Miami Canal."

Muskingum, Licking, and Fairchild to within 8 or 9 miles of Lancaster; thence west through the counties of Fairchild and Franklin to the Scioto Valley, which it enters near the line between Franklin and Pickaway Counties; thence south via the Scioto River to Portsmouth, covering a distance of 308 miles¹ through the richest portion of the grazing district, passing directly across the eastern half of the small-grain district, and then to its termination almost entirely along the line which divided the mineral from the corn and pork district.²

Several side-cuts were made to the Ohio Canal also before 1838. A lateral canal 11 miles long leading from Lockburn to Columbus was built,³ while one from the main canal at Carrolltown was by 1838 finished to Lancaster and was planned to extend along down the Hocking Valley to Athens and to the Ohio, if practicable.⁴ The lateral Walhonding Canal extended from the Ohio Canal at Roscoe in Coshocton County, 135 miles from Cleveland, up the Walhonding Valley into the small-grain counties of Knox and Richmond.⁵

Owing to the fact that the route from Cleveland to Beaver on the Ohio, just 30 miles below Pittsburgh, made it 240 miles shorter from Cleveland to Philadelphia than from Cleveland to New York City, and that the ice left the lake at Cleveland from 2½ to 3 weeks before it did at Buffalo,⁶ it was thought that a canal, constructed from Akron to Beaver, connecting with the Pennsylvania canal system to Philadelphia, would divert the trade of the Northwest from New York to Philadelphia, build up the points of trans-shipments, Cleveland and Pittsburgh, and increase the profits of the Ohio Canal and the Pennsylvania system.⁷ The Pennsylvania and Ohio Canal Company, with the major part of its stock held in Philadelphia, was therefore incorporated in Ohio in 1828; but, before the completion of the canal in 1839, the State of Ohio had subscribed one-third of the capital stock of the company.

The Sandy and Beaver Canal from Bolivar on the Ohio Canal to Smith's Ferry on the Ohio, 40 miles below Pittsburgh, was also intended "as a short cut for east-bound freight,"⁸ but it was not completed until 1846, after the first railroad period was inaugurated. By 1852 the paralleling of this canal by the Pittsburgh, Fort Wayne and Chicago Railroad caused its abandonment.

¹Atwater calls it 309 miles long; *A History of the State of Ohio, Natural and Civil*, 276.

²*Hesperian or Western Monthly Magazine*, I, 10, 1838.

³Atwater, *A History of the State of Ohio, Natural and Civil*, 276.

⁴Atwater, *A History of the State of Ohio, Natural and Civil*, 277. The Lancaster lateral branch of the Hocking Canal was privately built by a private company, incorporated in 1826; the remainder of the Hocking by the State, and contracts were let in 1836, 1837, and 1838. See McClelland and Huntington, *History of the Ohio Canals*, 40.

⁵*Hesperian or Western Monthly Magazine*, I, 11, 1838.

⁶*Niles' Register*, LV, 84, Oct. 6, 1838.

⁷*Ibid.*, LV, 84, 195, Oct. 6, 1838.

⁸Morris, *Internal Improvements in Ohio, 1825-1850*, p. 124.

If the above-described canals had been speedily completed, the great mineral district of Ohio, bounded on the entire southwest by the Ohio River, on nearly its whole northwest by the Sandy, Beaver, and Ohio Canals, cut longitudinally by the Marietta and Gallipolis turnpike, and traversed by the Muskingum slackwater and Hocking Canal, would have early had most ample outlet for its products.¹ The Pennsylvania and Ohio or Mahoning Canal and the Beaver were never profitable² and these improvements gave Philadelphia little assistance in her contest with New York.

TRAFFIC ON THE OHIO CANALS.

By 1831 there was such an amount of surplus products in Ohio seeking an outlet that the main Ohio canals did a thriving business, even before they were completed.³ By December 10, 1830, Niles quoted the *Scioto Gazette* as stating that the Ohio Canal "has reduced the price of salt from 87 to 50 cents a bushel, and reduced carriage on every article imported from abroad in a corresponding ratio. It has advanced the price of flour from \$3 to \$4 per barrel and wheat from 40 to 65 cents per bushel. It has raised the price of real estate and opened a ready market for it and has increased the business and hustle of the town 50 per cent."⁴

In 1835 there was shipped from Ohio to New York, by way of the Erie Canal, 86,000 barrels of flour, 98,000 bushels of wheat, 2,500,000 staves, and many other products.⁵ This was the first blow to the commerce of the Ohio River, for prior to this time all the heavier products had gone down the Ohio and Mississippi, and thence by sea to New York and other eastern ports. Even goods from western New York had found an outlet by this river route prior to the completion of the Erie Canal. However, the New Orleans trade did not seriously suffer from the canal competition of New York and Ohio, for during the period 1825 to 1850 the river trade showed a greater percentage of increase than did the canal trade. This was due to the development of the regions of the Middle West. The sections reached by the Ohio River and the canal were, in fact, capable of producing enough to utilize to the fullest extent the transportation facilities of both routes. The canals of Ohio acted as feeders for both main routes, although it must be understood that it was for local reasons that the Ohio canals were constructed, and it was the local trade which sustained them during their years of prosperity.

¹*Hesperian or Western Monthly Magazine*, I, 11, 1838.

²Morris, *Internal Improvements in Ohio, 1825-1850*, p. 125.

³Niles' *Register*, XL, 307, July 2, 1831, states: "Ohio canals doing a great business; 15,223 barrels of flour arrived at Cleveland in about a month, ending 14th of May, with 13,034 bushels of wheat," etc.

⁴*Ibid.*, XLI, 266, Dec. 10, 1831; XLVII, 261, Dec. 20, 1834, gives gross receipts of tolls, water-rents, etc., of the Ohio and Miami Canals for year ending October 31, 1834, as \$205,302; the previous year it was \$181,944.

⁵*Report of the Internal Commerce of the United States*, in *House Ex. Doc.* No. 6, 50th Cong., 1st sess., XX, pt. ii, 202.

The competition between the northern and southern routes was scarcely felt at Cincinnati until about 1850, when a new and more powerful competitor—the railway—appeared. At the first appearance of railways, many thought they would be used to supply connections between points which had no water transportation, for the people had come to recognize the fact that canals could not be built anywhere and everywhere. In the first 20 years of their history railroads were short, disconnected lines and were looked upon as purely local transportation routes.

After the canals had been opened the great benefits to the counties through which they passed began to be realized, and this made the people of the counties not thus served more pronounced in their opposition to paying for them by the general State tax. Partly to pacify these sections, the legislature established a permanent board of public works, which should “from time to time present to the consideration of the general assembly such objects of internal improvement as they shall judge the public interest may require.” In pursuance of this direction, the first board reported:

“That the action of the legislature, authorizing the construction of a variety of works at public expense, is a response to public sentiment, and that nothing short of the extension of canal navigation to every considerable district of the State will satisfy that public will which justly claims that benefits conferred shall be co-extensive with burdens imposed, and that in those counties where canals can not be made, an approximation to equality shall be obtained by the aid in constructing roads.”¹

When it became evident that railways might become serious competitors of canals, various means were employed to protect the canals. As early as 1838 the board of public works was instructed to report “whether in their opinion the extension of the Lake Erie and Mad River Railroad from Dayton to Cincinnati would operate to the injury and interests of the State by creating competition with, and diverting business from, the Miami Canal,” whereupon this board investigated the matter and reported that:

“The chief products moving south on this canal were flour, pork, whisky, and that moving north was merchandise. Practically all the pork, and a large proportion of the flour and whisky, are brought to points along the canal to await its opening, and all the pork, one-third of the flour, and one-fifth of the whisky would move to market by rail. Since the canal did not yet afford a revenue sufficient to pay interest on the investment, it would seem unwise to permit such a transportation route to be built.”²

Notwithstanding this opinion of the board, which was held for many years, there had already been chartered more than 20 railroad

¹Ohio Board of Public Works, *Annual Report*, 1837, pp. 14-15.

²*Ibid.*, 1838: It was further argued that since the raw products of the southwestern part of the State found their market along the Mississippi River a railroad would be no great gain, for when the river was frozen or low these products would be stored in Cincinnati instead of at the canals or at the points of production.

companies, in addition to the 55 canals and 80 turnpike companies.¹ As was to be expected from the character of the work which it did, this board of public works was subjected to much individual criticism and several legislative investigations, and, in fact, the board was for a time abolished. When a public work was to be undertaken many districts wished to benefit from it, and those which did not secure the benefits accused the successful sections of using improper influence. Party politics often joined with these sectional interests to embarrass the work of the board. The board was always a favorite object of attack for the party out of power, and this too often made its plans such as would prevent the criticism of politicians rather than further the commercial interests of the State. In 1841, owing to the hard times, the board was asked what the effect would be of a discontinuance of the public works. Upon an adverse report by the board, work was continued until the next year. The State's financial difficulties had then become so great that work was temporarily suspended.

Tolls as first established were based upon the value of the articles, which consisted chiefly of raw produce of the farm and certain merchandise for local consumption; but the board by 1845 was not at all confident that this merchandise could be kept upon the canals by the readjustment of charges.² The board reported in 1849 that "the toll had been reduced on merchandise and all through freight in order to compete successfully with the various rival improvements in this and other States."³ The lower tolls which were charged on western produce by the Erie Canal tended to draw these products to the New York market; and hence, in 1850, the board of public works of Ohio reduced tolls 30 per cent in an effort to secure the advantages which would result from having this western produce move through the Ohio canals. The railroads, however, more than met this reduction; whereupon the board asked for power to meet this competition instead of having tolls fixed by a general act of the legislature, for "otherwise a large number of citizens who have in many cases invested all they own in boats, stock, and business-houses on the canals will be greatly injured and the revenue from the public works will sink into insignificance and the work ultimately decay."³

Laws had been passed in 1850 to regulate the charge on both railways and canals, but neither obeyed these laws, although the canal interests, which were losing traffic, complained much concerning the violation of these laws by the railroads. The board reports that "both railroads and canals are desirable and necessary, but there

¹See files of the charters of incorporated companies, Office of the Secretary of State.

²Ohio Board of Public Works, *Annual Report*, 1845, p. 3.

³*Ibid.*, 1849, pp. 15-18. The opening of the Lake Erie and Mad River Railroad offered a more rapid means of transportation between Cincinnati and the lake. The Little Miami Railroad also supplied a route to the Cincinnati markets for produce of the southwestern part of the State. In other sections railways and highways were freeing producers from their dependence on canals.

should not be, and there would not be, any conflict between the two systems if the public authorities and those who direct the affairs of railroads were at all times actuated by a sincere and enlightened desire to promote the interests of the people."¹

Some argued that the canals should be sold, but it was the opinion of the board that the railroads would be the purchasers, and its members advised that canals should be maintained in order to keep down freight rates. This in itself indicated that canals were becoming secondary transportation routes, as is shown by the following extract from the report of the board:

"It was supposed that competition between railways would be effective in keeping down rates, but it is not likely to do so, for consolidation is the order of the day. The immense railway system of Ohio is rapidly becoming a unit over which periodical conventions of railway officials constitute a flexible, but most efficient, board of control. We have felt it to be our duty to resist by all means at our disposal every intrusion by railroads upon the canals which impaired the navigation and traffic of the latter."²

By 1855 the board admitted that, notwithstanding the decrease made by them in tolls, the railroads had been able to secure their share of the traffic because as private corporations they could make individual terms, and as a result have secured the transportation of much freight which naturally should move to market by way of the canals.³ A few years later the situation was even more apparent, and this led the president of the board of public works to report in 1860 that:

"The experience of the past nine years proves that under State control the canals can not retain their business whenever they come into competition with railroads. This is due to an inflexible tariff of tolls and by a division of freight charges into two items, tolls and freight, in the control of different parties, one of which takes no interest in the business."⁴ The boat owners meet at every point active and ever watchful railroad freight agents with full control of the freight charge and ready to contract either for separate lots, for the season's business, or even for years in advance at such rates as they find necessary to receive the business. The railroads have actually taken possession of the grain market at points where canals and railways compete, and require their agents to purchase grain for the storage of which they use the empty cars on the side-tracks. The canals at these points receive only the surplus, which the railways can not carry. Even in years of abundant harvest, such as the present, the increase in the canal business is but trifling, and during the past ten years the number of boats on the canals have decreased 500 per cent."

Politics, as ever, entered into the question, and neither party dared to ask the people of the State for sufficient money to rebuild the canals, for public sentiment was opposed to them. The people were

¹Ohio Board of Public Works, *Annual Report*, 1852, p. 22.

²*Ibid.*, 1853, p. 23.

³*Ibid.*, 1855, p. 28.

⁴As a matter of fact this was only a secondary cause of the decrease of canal traffic, for, as we shall later learn, the industrial demands had grown far in advance of the transportation facilities of the canals and the primitive organization of the transportation business on them.

interested in cheap and quick transportation, and if the railway promised this (as they thought it did) it was unfortunate, they argued, that they had spent so much money on canals; but, now that the mistake was known, it would be unwise to spend more upon a means of transportation which had been so productive of scandal and trouble and which was now inadequate.

New York State increased her canals to double their former size in order to keep pace with the increased industrial demands, but Ohio did nothing and her canals decayed. This decay was accelerated when she leased them in 1861, although many people rejoiced at this event, "because the eternal question of the canals was for a time solved."

EFFECT OF CANALS ON THE PROSPERITY OF OHIO.

It is impossible to prove just what effect the canals had upon the industrial and social life of the State. One can present evidence of the increased wealth of the regions served, remembering that the canals were but one of the causes of this increased wealth, although the most important one in the period from 1830 to 1855. The population of Ohio in 1830 was over 938,000, and in 1860 over 2,340,000. The growth of the population of certain cities is shown in table 40.

TABLE 40.—*Growth of certain cities in Ohio.*

City.	1820	1857
Cincinnati.....	2, 602	200,000
Cleveland.....	400	60,000
Dayton.....	1, 139	25,000
Chillicothe.....	2, 416	10,000
Toledo.....	500	14,000
Portsmouth.....	500	5,000
Newark.....	700	4,000
Akron.....	700	4,000

Another method of indicating the effects of the canals, although by no means a conclusive proof, is to exhibit the increase in the value of property, as shown by the taxation returns. The 37 canal counties show an increase in the value of real estate and personal property from \$53,000,000 in 1835 to \$486,500,000 in 1859, while the 51 non-canal counties show for the same period an increase from \$41,000,000 to \$390,000,000.¹ Producers favorably located were able, by means of the canals, to reach markets with their abundant raw produce; other producers more or less remote from the canals were little benefited by them, and after all is said in their favor the fact remains that the canals of Ohio and of the Middle West were distinctively local transportation routes. The improvement in transportation as compared with that of the preceding period of mud roads and far distant rivers had, however, been a very great factor in the industrial progress of the State, and although their golden age had ended by 1855, we must not forget that it was by their aid that many of the present industries were founded and developed. It was this development which necessitated a more rapid and adequate means of transporta-

¹Ohio, *Annual Report of the Auditor of the State*, 1859, p. 21. These figures are somewhat misleading, for the counties through which the canals passed were on the whole the natural agricultural counties, where a greater increase was to be expected.

tion. They found a market for the surplus products of the forest, field, and mine; they established a commercial connection between the eastern seaboard and the western interior. What was actually accomplished by connecting the Great Lakes and the Mississippi River exceeded all rational expectations and prophesies, extravagant as they had seemed in the precanal period; but eventually, and notwithstanding the powerful aid of the State legislature, traffic left the canals. For this result the following reasons may be assigned: (a) the canal interests failed so to develop a systematic organization of their business as to keep pace with industrial demands; (b) they served only local districts; (c) they were closed a part of the year and were much slower than railways in transporting goods; (d) tolls were not adjusted to varying needs and conditions; (e) the people lacked confidence in their utility and did not divorce their management from politics; (f) the railways discriminated against them.

LAKE TRAFFIC PRIOR TO 1850.

The first white men to see any of the Great Lakes waterways were Jacques Cartier and his navigators, who sailed up the St. Lawrence to Quebec in 1534. Champlain in 1608 and 1615 pushed his explorations as far as Lake Champlain and Lake Huron, where he established missionary stations. In 1641 two missionaries reached St. Mary's Falls, and in 1658 two fur-traders arrived at the western end of Lake Superior. In 1665 Allouez reached St. Mary's Falls, and soon after established missions there and on the shores of Green Bay. To communicate with all these scattered settlements, La Salle and Father Hennepin built a schooner of 10 tons at Fort Frontenac, now Kingston, Ontario. From there they sailed to Lewiston, near the mouth of the Niagara River, whence they proceeded afoot to a point about 6 miles above the falls at the mouth of the present Cayuga Creek. Here they built cabins and made plans for a new ship, which was called the *Griffin* and launched in May 1769. This was the first vessel to navigate the upper lakes. La Salle sailed out into Lake Erie on August 7, and arrived at Mackinac on the 27th, leaving for Green Bay on September 2. The *Griffin* was lost on the return voyage, at a point somewhere between Green Bay and Mackinac, and thereafter the French navigation of the lakes seems to have been chiefly confined to bateaux, some of which were of large size, capable of transporting troops.¹

Immediately after the English took Fort Niagara, in 1759, they commenced to build vessels above the falls. Several small ships were built, and the fleet thus formed took an important part in the siege of Detroit in 1763. In 1755 two sloops were built by the English at Oswego, named the *Oswego* and the *Ontario*. In the same year General Shirley placed on Lake Ontario a sloop and a schooner, each

¹Report of Internal Commerce of the United States, in House Ex. Doc. No. 6, 52d Cong., 1st sess., XXVIII, pt. ii, app. 1, pp. 13-14.

of 60 tons burden, besides a number of "galleys and whaleboats." Few new vessels were put on the lakes until after the Revolution. Most of those already there were vessels taken from the French at the time of the conquest of Canada.¹ After the American Revolution, commerce on Ontario grew rapidly in importance, due to two rapidly increasing lines of settlement near the lake shore. These were (1) the settlements of Tory refugees from the American States, who, being given land by the British Government in Upper Canada, settled especially around Yorkville, now Toronto, and other favorable sites along the lake, soon forming prosperous communities; (2) southern settlements resulting from the opening of the Black River, Oswego, and Genesee Valleys, by the construction of roads and improved waterways, which led to a rapid development of the country tributary to Lake Ontario, and consequently increased the use of that body of water as a means of trade.

The first American vessel placed on any of the Great Lakes following the Revolution was built at Hanford's Landing, 3 miles below Rochester, New York, in 1798. She was called the *Jemimy* and was built by Eli Granger, and July 22, 1798, was sold to Augustus and Peter B. Porter. After the construction of the canal, which made navigation between the Hudson River and Lake Ontario possible, by way of the Mohawk River, Oneida Lake, and Wood Creek, the commerce on the lake grew rapidly. In 1800 there were vessels on the lake owned by Oswego forwarders. The principal trade-route at this time was from Oswego to Queenstown, on the Canadian side of the Niagara River.

An attempt was made in 1806 to divert trade from the Canadian to the American side of the river by building a road from Lewiston to Schlosser's Dock, a point above the falls, where the river again became navigable. No success was achieved, however, until the embargo and non-intercourse acts of 1807 to 1809, which put an end to the business on the Canadian side. During these years the commerce of Lake Ontario grew rapidly, until by 1810 there was a regular trade employing many coasting-vessels. The chief articles of commerce were the Indian annuities, stores for western military posts, goods and peltries of the fur companies, Onondaga salt for Pittsburgh, and miscellaneous provisions and supplies. In 1810 the largest boat yet seen on the lakes was launched, the schooner *Charles and Ann*, of 100 tons register. It was built at Oswego and attracted much fame from its size. In 1818 there were 60 vessels on Lake Ontario. Besides the articles above mentioned, the new settlements on the south shore began a trade in timber and staves. Commerce with these points was very difficult for the coasting-vessels which picked up their wares

¹*Report of Internal Commerce of the United States, in House Ex. Doc. No. 6, 52d Cong., 1st sess., XXVIII, pt. ii, app. 1, p. 14.*

because of the lack of harbors. The timber was generally rafted out to the waiting schooner and the staves carried in scows. The principal markets for the timber and staves were Montreal and Quebec.

A steamboat, the *Ontario*, was constructed at Sackett's Harbor in 1817, the first to navigate the lakes, and the first steam-vessel put on water subject to a swell. Her first voyage marks an era in steamboat construction. She was built under a grant from heirs of Robert Fulton, and built on the same plan used for river navigation, wherein the weight of the shaft and the paddle-wheels was relied upon as sufficient to keep them in their bearings. But on the first trip of the *Ontario* she met some rough seas, with the result that the waves lifted the paddle-wheels and threw the shafts off the bearings, which caused the revolving wheels to tear the coverings to pieces. The vessel was compelled to put back into port disabled, and a device contrived for securely holding the shaft in place. After this she operated successfully. Another steamer, the *Sophia*, was built at Sackett's Harbor the next year, 1818. She ran as a packet between Sackett's Harbor and Kingston.

The schooner *Washington* was the first American vessel to be built on Lake Erie. She was built near Erie, Pennsylvania, in 1797, and sailed on Lake Erie during that season, but was sold at the end to a Canadian, who carried her on wheels to Ontario, where she sailed from Queenstown as a British vessel under the name of *Lady Washington*. By 1816 the whole tonnage of the Lake Erie ports, including Detroit, was 2,067 tons, the vessels ranging in size from 10 to 99 tons, save two of 112 to 134 tons, respectively. In 1825 there was a steamboat of 350 tons, and 30 or 40 small craft, with a total tonnage of 2,500 tons on all the "upper lakes" together. By 1830, tonnage had increased only to 3,947 tons, but in 1831, when the improvements at various ports began to be felt in the lake trade, the tonnage nearly doubled, and employed 11 steamboats and a hundred other vessels with an aggregate tonnage of 6,852 tons. With the completion of the Ohio Canal in 1832 the tonnage increased to 8,552 tons. The next year found the harbor improvements on the lakes so far advanced that ports were accessible to the largest vessels in use, and the tonnage increased to 10,741 tons.¹

The first steamer on Lake Erie, as has been noted, was the *Walk-in-the-Water*, built at Black Rock in 1818. She made her first trip from Black Rock to Detroit in August of that year. Her machinery was brought from Albany to Buffalo, 300 miles, in wagons drawn by from 5 to 8 horses each. In order to get out of the strong current at the head of the Niagara River, the boat was regularly towed up by several yoke of oxen, a process known as a "horned breeze." The *Walk-in-the-Water* undertook regular trips between Black River and

¹Extract from *Report of Bureau of Topography*, 1834, in Hazard, *U. S. Commercial and Statistical Register*, II, 184, Mar. 1840.

Detroit, making the round trip in 9 to 10 days. She was wrecked in November 1821, and her machinery was used for a second steamer, the *Superior*. Soon after, the first high-pressure steamer on the lakes was built, the *Pioneer*. The first lake propeller, which was also the first screw steamer used for business purposes, was launched at Oswego, New York. By this time the commerce of the upper lakes had grown to considerable proportions and was increasing rapidly. It was nearly all west-bound, consisting of supplies for the growing settlements. As railroads were not yet built into the upper lake country, the carrying of passengers was the main portion of the trade.¹

Chicago became a commercial port of importance as early as 1833, the year of its incorporation. Although the population was but 350, the citizens were already clamoring for harbor improvements. There were 300 arrivals in port that season, bringing more than \$50,000 worth of salt and other merchandise to the value of \$400,000.² In 1836 the direction of the grain trade began to turn, and the first cargo of grain from Lake Michigan arrived in Buffalo, consisting of 3,000 bushels of wheat, carried by the brig *John Kenzie*, from Grand River, Michigan. By 1840 a regular movement from west to east had been established, carried by a few sailing-vessels of about 125 tons each and a half-dozen side-wheel passenger and freight steamers.

The commerce on Lake Superior was insignificant long after that on the lower lakes had reached flourishing proportions. Accounts of trading-vessels prior to 1843 are chiefly tradition. All of them seem to have been owned by the fur-trading companies. In 1834 the American Fur Company built a vessel which was large for the time, called the *John Jacob Astor*, and later two others, of which there are few definite accounts. The mercantile trade of the lake occupied but a few small vessels until the discovery of copper in 1843-44. The early capitalists and explorers who went into the copper country did so in canoes or open Mackinaw boats. So slow and tedious was this sort of travel, however, that in 1844 and 1845 vessels were hauled across the portage at the Sault Ste. Marie, and by July 1834 there were several schooners on the lake, followed later in the summer by a 260-ton propeller, the *Independence*. A large schooner, the *Napoleon*, of 200 tons burden, was built at Sault Ste. Marie and launched late the same season. All the transferring of goods across the portage at the Sault at this time was done by one man with a horse and cart; but by the next year two double teams were added to the equipment.

¹Report on Internal Commerce of the United States, in House Ex. Doc. No. 6, 52d Cong., 1st sess., XXVIII, pt. ii, app. 1, p. 16.

²Hoffman, *A Winter in the Far West*, I, 329, app.

CHAPTER X.

PLANK ROADS.

Origin, 299. Methods of financing, 300. Competition with railroads, 302. Plank roads in the West, 303. Advantages, 305.

ORIGIN.

Contemporaneously with the development of the railway idea other schemes were devised for the betterment of transportation conditions. In fact, owing to popular skepticism concerning the feasibility of railways, as well as on account of their great cost, which made capital reluctant to undertake them, schemes for road improvement for a time far exceeded schemes in popular favor for railway construction. That good roads were necessary auxiliaries to railways, and essential to insure the general prosperity both of the farmers and of the railways was scarcely comprehended, and the various "improvements" were too often undertaken in a spirit of rivalry rather than of co-operation.

In the latter part of the eighteenth century, Macadam's scheme of road-making came into general use and was the basis of operation for many turnpike and toll-road companies. In 1835-36 the first plank road was built at Toronto, Canada, an achievement called by an engineer and expert in road-making, "the most valuable improvement since Macadam's, and one superior to his in many localities."¹ In the succeeding 20 years more than 2,000 miles of plank road were built in New York State, with probably several thousand miles distributed in other States from Maine to the Mississippi Valley. The cost of the first mile is said to have been \$2,100.

Gillespie, in his *Manual of Road Making*, thus describes the method of laying a plank road:

"In the most generally approved system, two parallel rows of small sticks of timber (called indifferently *stupers*, *stringers*, or *sills*) are embedded in the road, 3 or 4 feet apart. Planks, 8 feet long and 3 or 4 inches thick, are laid upon these sticks, across them at right angle to their direction. A side track of earth, to turn out upon, is carefully graded. Deep ditches are dug at each side, to ensure perfect drainage; and thus is formed a plank road."¹

The introduction of the plank road in the United States was due to George Geddes, and the first example of it was built in 1837 at Syracuse, New York. The cost per mile of these roads ranged from \$1,000 to \$2,400, exclusive of extra earthwork, bridges, culverts, etc. The upkeep of the roads was provided for by a system of toll-gates, which in New York were by law not less than 3 miles apart. The first New York road, the Syracuse and Central Square road, proved so useful that in the first two years more than 161,000 teams passed over it,

¹Gillespie, *Manual of the Principles and Practice of Road-Making*, 231.

wearing it down 1 inch. The roads were called the "farmer's railroad" and seem to have been very popular. That they were much needed is evidenced by the author in his preface, the opening of which is:

"The common roads of the United States are inferior to those of any other civilized country. Their faults are those of direction, of slope, of shape, of surface, and general deficiency in all the attributes of good roads. Some of these defects are indeed the unavoidable results of the scantiness of capital and labor in a new country, but most of them arise from an ignorance either of the true principles of road-making, or of the advantages of putting these principles into practice."¹

In some parts of the country plank roads seem to have retarded the development of the railroad. Notably was this so in Alabama, where a railroad incorporated in 1834 gave way to a plank road, and little more progress in railroad building was made for some years.² In Missouri the enthusiasm for plank roads was succeeded by a renewed interest in railroads; as plank roads seem to have proved largely a failure there, they gave way to renewed activity in favor of railroads.³ Michigan, where the demand for means to open up the new country was very pressing, built many roads and rapidly. During the legislative session of 1848, Governor Ransom, a strong advocate of plank roads, signed no less than 50 acts to incorporate plank-road companies. Six of these had "Michigan" in their corporate name—the Ann Arbor and Michigan, Dexter and Michigan, Jackson and Michigan, Battle Creek and Michigan, Portland and Michigan, and Michigan and Mason—a fair index of the ambitions of the builders.⁴ They were popular, and apparently proved highly profitable to the companies. They were substantially constructed, of white oak, at the relatively low cost of \$1,200 to \$1,500 per mile. As branch railroads at this time had almost universally proved failures, the utility of the plank road as a substitute branch railroad was very marked, especially to through lines, such as the Michigan Central. It afforded to the railroad many of the advantages of branch lines, without the burden of their support.⁵

METHODS OF FINANCING.

The methods of financing these roads seems to have varied. They were probably built in most cases by private parties, as were other toll-roads. In North Carolina, the Fayetteville and Western Plank Road was incorporated in 1848, with a capital of \$200,000, of which the State subscribed one-fifth.⁶ The Greenville and Columbia Railroad was interested in the construction of some roads tributary to it,

¹Gillespie, *A Manual of the Principles and Practice of Road-Making*, preface, 3.

²Brown, *History of Alabama*, 166.

³Thornton, *Early History of Railroads in Missouri*, in Missouri State Historical Society, *Proceedings*, 2d Annual Meeting, 1903, p. 32.

⁴Utley, *Michigan as a Province, Territory and State*, III, 315.

⁵Michigan Central Railroad, *Annual Report*, 1850, pp. 16-17.

⁶Wheeler, *Historical Sketches of North Carolina*, I, 136.

and there are numerous other instances.¹ In Indiana 400 miles of plank road were built in 1850, and 1,200 additional miles were surveyed and in progress.² The economic importance of the roads, while not permanent, was considerable in their day. As suggested above, they took the place of feeders and branch lines, which at that time were apparently everywhere failures. The Virginia board of public works, in its annual report for 1851, included reports of two plank-road companies and says:

"In Virginia they are but experiments whose every step is attended by doubts, but their success which may now be regarded as inevitable will be the dawn of a new era."³

A writer in *De Bow's Review*, in 1851, says of a proposed road to be built in South Carolina from Charleston to the mountains:

"In the list of improvements which characterize the present age of progress, and which have aided materially in widely diffusing the comforts of human life, the plank road is destined to occupy a most prominent place. Good common roads tend to change the condition of the planter and farmer wherever they are extended. The plank roads give him a thoroughfare infinitely superior to any other, not excepting railroads. The superiority consists in its peculiar adaptation to the wants of a people who necessarily maintain a large number of mules and horses, which are fed and kept in idleness, at a season of the year when crops are sent to market, a motive-power which would carry a crop to market without cost, except for tolls. The traveling community, too, will, by the same means, move without being subjected to the rules and regulations of others, as to time, speed, and equipage, in which they desire to travel.

"The cheapness and facility with which plank roads may be constructed in our State need only to be made known to produce a change which will in after years annihilate one of the greatest evils known to our country, the mud and mire through which our bulky and valuable products are yearly dragged to market. In many parts of our country this is a source of involuntary hermitage, for a day's journey is not attainable, except through roads which seem to have contracted all the evils that could embarrass a traveler.

"Plank roads, by penetrating our forests, will find material for their construction, and afterwards afford means of carrying them into portions of our State where timber has been exhausted. They will be the means of redeeming and settling lands hitherto considered useless. When introduced they will so expedite travel as to bring a large range of our surrounding country so near us as to be, as it were, the environs of our city.

"The plank road is the road of the people, open to all, affording relief to the beast of burden, multiplying and cheapening the means of carrying produce to market and affording a delightful means of travel. We can trace back their origin to Russia, but are unable to fix a date. They were introduced into Canada in 1834, in our northern States in 1846, recently in Georgia and other southern and western States. They have superseded McAdamized roads, and in some instances held successful competition side by side with railroads. Even in countries where stone is abundant and wood comparatively scarce, they are one-half cheaper than McAdamized roads, and one-fourth of the cost

¹Greenville and Columbia Railroad, *Proceedings of Stockholders*, 1850.

²Message of Governor Wright of Indiana, Dec. 1850.

³Virginia Board of Public Works, *Annual Report*, 1851, p. xxvi.

of railroads, and when constantly used by heavy burthen wagons so as to wear them out before they rot, they are more durable than McAdamized roads, including the outlay necessary to relay the plank road once in seven years. A horse or mule will draw twice the weight on a plank road that he could on a McAdamized one, travel with greater speed, more ease to himself, and less wear to the vehicle which he draws. The State of New York, the first to introduce them, has extended this species of improvement to over a thousand miles, which she has now already completed and in daily use. In the whole history of internal improvement there is scarcely anything to surpass the rapidity with which this system has developed itself. Plank roads by the side of railroads are in use in New York, and paying 10 to 15 per cent carrying passengers at 2 cents per mile."¹

The quotation has seemed worth while, both as showing the activity of popular thought on the subject of transportation and the importance attached to plank roads as a means of providing transportation low enough in cost to be economically possible. Simplicity of construction was a strong point in favor of the roads; they could be built by the local labor forces, and "portable saw mills" are frequently mentioned as eliminating the item of carriage of material.² Local capital would also be sufficient, as "another advantage attending the construction of plank roads [arises] from the fact that whatever work may be done at any one time may be completed and applied to immediate use. This will enable neighborhoods or companies to progress with the work by adding sections from time to time, according to their means, while it ensured to them also the full benefit of their labor."³ The importance of being able to work with little capital and a short period of unproductivity was of great weight, especially in less-settled districts, as in the South.

COMPETITION WITH RAILROADS.

The conservatism of the public and the comparatively slow development of railroads seem to have made it possible for plank roads to compete with the railways. In New York State there were several such, even between places also connected by canals. The road from Schenectady to Saratoga was parallel to a railroad, and while incomplete, a line of stages did business upon it, carrying passengers through at the rate of 50 cents for the 21 miles. It is said in partial explanation of this that the railroad between the two places was in such bad order as to deter many persons from traveling upon it.⁴ The rate of travel in coaches upon a plank road with 4 horses and counting stops was about 9 miles an hour. A load of merchandise or produce with 4 horses was estimated at 30 miles per day. The rate of toll in New York, whose system became the model for all others, was 0.75 cent per mile for a single horse and vehicle of any kind, 1.5 cents for two

¹*De Bow's Commercial Review*, X, 475, April 1851.

²*Ibid.*, VII, 408, Nov. 1849.

³*Ibid.*, VIII, 299, March 1850.

⁴*Ibid.*, VII, 463, Nov. 1849.

horses and vehicle, and 0.5 cent per mile for each additional horse. Counting 4 horses as a usual number, this was 2.5 cents per mile for which the New York law provided that when the receipts ran above 10 per cent on the investment tolls were to be reduced, after a fund for repairs and renewals had been set aside.¹ Some roads not built under this restriction earned as high as 30 per cent on the investment.

An interesting argument in favor of plank roads is found in a letter written for *De Bow's Review* in 1849, by J. S. Winter, presenting the advantages of the plank road over the railroad and considering the cost of freight traffic. Most writers discuss only passenger traffic, but Mr. Winter argued that plank roads should be built not merely as a means of facilitating local travel, but to act in competition with the railroads, and so keep down their rates. He contrasted the heavy expense of building and maintaining a railroad with the much smaller sum involved in the case of a plank road. Regarding the statement that freight can be more cheaply conveyed over the railroad than the plank road, he called attention to the fact that the charge on a railroad in his State (Alabama) on a bale of cotton from Franklin to Montgomery, a distance of 33 miles, was 65 cents. He continues:

"On a plank road, a wagon, properly adjusted, with 5 horses attached, can easily bring from that point to Montgomery 20 bales of cotton, accomplishing the distance in a single day. A planter living at that distance would then (in becoming his own carrier), by the use of a perhaps otherwise idle wagon and team, one day down and one day back, realize \$10.50 over and above the tolls upon the road, admitting even that he would secure no return load; should he, however, be fortunate enough to secure a return load, of 6,000 pounds only, at the railroad rate of 35 cents each upon barrels, his compensation would be double, or \$21, for the absence of a wagon and team two days, or nearly three times as much as he would demand if he kept them for hire. . . . Like all other monopolies, railroads require competition to induce them to moderate their charges."²

He finishes his argument by calling attention to the fact that, if the country will support more railroads, it is absurd to think that a plank road will not pay. Especially were the people of Alabama anxious for roads in order to expand their coal and iron trade, in view of the possibility of developing a trade in wool and other new staples. The importance of good transportation in opening up new industries was clearly stated.³

PLANK ROADS IN THE WEST.

Chicago early became a center in the history of plank roads. The first plank road was begun in May 1848, and was called the South-western Plank Road. In 1850 it was completed from Chicago to

¹*De Bow's Commercial Review*, VIII, 299, March 1850.

²*Ibid.*, VIII, 390, April 1850.

³*Ibid.*, VIII, 469, May 1850.

Brush Hill, 16 miles, and soon afterward an extension known as the Naperville and Oswego was built. A "Northwestern" road was built in 1849-50, from Chicago to Wheaton, a distance of 18 miles, with branches over the present Milwaukee Avenue. In 1850-51 the Western was organized. This road operated a sawmill in addition, and ran from the Desplaines River on the Northwestern to the west line of Du Page County, through Bloomingdale, a distance of 17 miles. The Elgin and Genoa, organized in the spring of 1850, connected with the Western Plank Road Company and passed through Elgin to Genoa in De Kalb County, 28 miles. Another road was organized in 1850, to extend to the southern county line, but was never finished. It was built to Kile's Tavern, a distance of 10 miles. The 50 miles of plank road thus built in 1850 cost Chicago \$150,000.¹ A part of the city itself was planked, beginning in 1849, as it had been found useless to lay a stone pavement, since it would sink out of sight in one or two years. On the more traveled streets planking proved little better, since the heavy teams broke up the planking and the street became dangerous. West Madison and State Streets were planked as late as 1859 and on some streets, as Blue Island Avenue, some plank roads remained 10 years later.²

Chicago was at this time beginning to be a railroad center; hence plank roads did not develop to the same extent as in less rapidly developing sections.³ In Wisconsin, for example, Philo White, in a report of the committee on internal improvement, spoke very strongly in favor of the passage of a general law for the organization of plank-road companies. The report goes on to say that while railroads are "unquestionably the mightiest means of overcoming space . . . that the genius of man has yet devised," yet the physical condition and business wants of Wisconsin demonstrate the peculiar adaptation of plank roads to the State. "In fact, it has now become the settled conviction of almost every investigating mind that this plan of improving the common highway is the *ne plus ultra* of road-making in our country."⁴ This same report goes on to predict that in time Wisconsin will be ready for and will possess many railroads, but that the dearly-bought experience of the past has taught them that to thrust improvements in advance of the business to sustain them is futile. In view of these facts the committee was of the opinion that a class of thoroughfares less costly in their construction and more practical for every-day use than the railroads was needed in all portions of the Territory of Wisconsin.

¹Andreas, *History of Chicago*, I, 197.

²*Ibid.*, I, 192.

³*Ibid.*, I, 197. Some people in their unbounded confidence in plank roads raised considerable opposition to the railroad. A specimen of this argument is quoted in Andreas, *History of Chicago*, from a local paper, the *Democrat*, of Feb. 16, 1848.

⁴*Report of Committee on Internal Improvements*, in Wisconsin, *Senate Journal*, June 1848, app. 11, pp. 57-61.

ADVANTAGES.

The advantages of plank roads, as summed up by the author of the manual of road-making quoted above, lay chiefly in the fact that they were the "farmer's railroads." Although all classes profited, the farmer gained most and directly. Their peculiar merit was the diminution of friction, by which a horse was enabled to draw from two to three times as great a load as he could on an ordinary macadamized or good common road. They were in this respect, says the writer, akin to railroads, while having one advantage over railroads, that everyone could drive his own wagons upon them. The ratio of burden that could be borne was mathematically 2.75 to 1. Speed was also greater, but the peculiar advantage to the community, Gillespie thought, lay in the fact that they continued always in perfect order and afforded undiminished facilities for travel at all seasons, while common roads are rendered impassable by the continued rains of autumn, the occasional thaws of midwinter, or the "breaking-up" in spring. The farmer was thus enabled to carry his produce to market at times when otherwise he would be unable to use his time to advantage. The values of farm lands contiguous to these roads were enhanced. The farmer was enabled to carry his load to a more distant market than before, or to increase his load, and could sell more cheaply, thus benefiting the consumer. The stockholder in such cases generally found the road earned two or three times its original cost, above repairs and incumbrances, before it was worn out. Thus all parties were satisfied—the farmer, the community as a whole, and the stockholder of the particular road.¹

¹Gillespie, *A Manual of the Principles and Practice of Road-making*, 249-253.

CHAPTER XI.

THE FIRST RAILWAYS.¹

The need of railways, 306. Early railways in Europe, 306. Early railways in America, 308. The construction of the road-bed, 310. Engineering problems, 313. Traffic problems, 314. Government regulation of railroads, 316. Opposition of rival interests, 317.

THE NEED OF RAILWAYS.

With the development of agriculture, industry, and commerce in the first quarter of the nineteenth century, the increasing volume of traffic to be moved justified and stimulated every effort to improve the community's equipment in transportation service. Upon this improvement, in fact, depended the exploitation of a vast extent of fertile territory, and under the conditions it was inevitable that the railway should supersede roads and waterways in proportion as the railway demonstrated its superior value and capacity. With the advent of the railway and the utilization of steam-power in the transportation service, a new standard of efficiency was applied to roads and waterways, and, judged by this new standard, they were inadequate. Embarrassments to commerce which had been accepted as matters of course became unbearable as soon as means were devised of avoiding them. Among these embarrassments may be mentioned the long interruption of traffic during the winter, delays due to spring freshets and boggy roads, and constant waiting upon wind and water, upon slow-moving wagons and uncertain boats. Farmers, manufacturers, and merchants became impatient and eager for some more speedy and certain means of travel and transportation. The application of the steam-engine to the railway for long-distance traction was, however, for a time looked upon, if not with distrust, at least with incredulity, and the new agency aroused the powerful opposition of vested interests represented by turnpike, canal, bridge, and stage-coach companies, by State governments which desired revenue from canals, by tavern-keepers, and even by farmers, who saw the market for horses, hay, and grain seriously impaired. In 1806, an American, Samuel Johnson, published a book on rural economy, in which he remarked, "railways nearly answer the purpose of canals, and are frequently called dry canals."²

EARLY RAILWAYS IN EUROPE.

One of the first books to discuss railways, canals, and roads scientifically was a German treatise, published in 1813 by Franz Anton Gerstner. He had previously published a project to connect the Moldau with the Danube by a railway instead of a canal, a scheme

¹A part of this chapter is based upon Cleveland and Powell, *Railroad Promotion and Capitalization in the United States*, 46-76

²Johnson, *Rural Economy*, 232.

which was carried out in 1827. Many locomotives were built before Stephenson's *Rocket* proved successful in 1829. In 1803 a steam-engine was used to furnish power to a carriage designed to run upon common roads. In 1813 the first locomotive run upon rails was constructed by two English mechanics. Both of these inventions aided and stimulated men working along similar lines, but results were unsatisfactory, because nothing could be found to furnish power as cheaply as horses. The railway had been in use in manufacturing plants in England since 1671, for carrying heavy articles on small hand-cars from one part of the place to another.

The use of cars operated by hand in collieries goes back much farther. This method was often used to connect with a waterway, but was generally regarded as a poor substitute for a canal. Though seen only in mines, collieries, and ironworks, by degrees such changes in material and construction were effected in the railway as to give it promise of a much wider use. The first notable improvement was the use of cross-ties, to which the wooden rails were pegged. Next, to prevent friction and abrasion, narrow strips of wrought iron were substituted for the hardwood strips that had been used for the bearing-surface of the track timbers. In 1767 solid rails of cast iron were introduced, owing to the scarcity of timber. These were at first flat, but in 1789 began to be cast with a flange on the outer edge. This in turn was changed to the inner edge, and then to the wheel of the car.¹

The older practice of these railways was to put the whole load upon one large wagon or car. Later it was found that a saving in construction could be made by dividing the load among several cars, connected by links or chains, which distributed the weight over a larger surface, decreasing wear and possibly increasing the tractive efficiency of the motive-power. This gradual development led to the wider application of the railway to transportation.

In 1801 Dr. James Anderson of Edinburgh put forth a suggestion in the form of "Hints calculated to promote the internal prosperity of this country, to augment its produce, and to alleviate the pressure of the present times with regard to the high price of provisions."² He not only proposed the general use of the railway to supplement artificial waterways, but he ventured to predict that "under proper management it may, perhaps, be made in some cases to supersede the use of canals where these are actually practicable." He planned that each car should rest upon a truck designed to run only upon the railway, and be removable so that it could be transferred by means of a crane to a similar truck adapted to common roads. By this method a train-load could be distributed at points along the line

¹Jackson, *Lecture on Railroads*, 10; Watkins, *Development of the American Rail and Track*, in *Report of the National Museum*, 1889, in *House Misc. Doc. No. 224*, 51st Cong., 1st sess., XXI, pt. ii, 657; Smith, *Book of the Great Railway Celebrations of 1857*, p. 18.

²Anderson, "On Cast-Iron Railways," in *Recreations in Agriculture*, IV, 198-217.

without a break in bulk. Farmers could have cars of their own in which they might ship their grain, safely locked, to any part of the country. Accompanying this suggestion, he made a plea that the railway should never be made the subject of control by the "avaricious money-lender," or the "source of gambling traffic similar to that which has taken place to such a vast extent in this country with regard to navigable canals." "To guard against these evils," he declared, "all that is necessary is to prevent these railways from ever becoming private *property* on any account."

In March 1802, Richard L. Edgeworth contributed an article to *Nicholson's Journal* "on the practicability and advantages of a general system of railroads, and the means of carrying the same into effect." Like Anderson, Edgeworth proposed no essential alteration in the carriage to be used, and likewise he would have the load carried in a train rather than a single car. The only novelty he proposed was the use of four railways, instead of one, in order to expedite traffic. The two outer roads were to be used for light or passenger vehicles and the inside pair for the heavier freight-wagons. He also seems to have had an idea of using power from an engine to draw them, but in general these schemes were almost solely for the purpose of improving the roadway and vehicles, and had no reference to means of locomotion. However, several were at work on the problem, and some believed it would come in time, like Oliver Evans, who wrote in 1812, three years after he had tried and failed to form a company for the construction of a railway from Philadelphia to New York:

"When we reflect upon the obstinate opposition that has been made by a great majority to every step toward improvement; from bad roads to turnpikes, from turnpikes to canals, and from canals to railways for horse carriages, it is too much to expect the monstrous leap from bad roads to rail-ways for steam carriages, at once. One step in a generation is all we can hope for. If the present should adopt canals, the next may try rail-ways with horses, and the third generation use the steam carriages. . . . I do verily believe that the time will come when carriages propelled by steam will be *in general use*, as well for the transportation of passengers as goods, travelling at the rate of 15 miles an hour, or 300 miles per day."¹

EARLY RAILWAYS IN AMERICA.

In America, as in England, the "railway" came before the railroad. The earliest work of the kind seems to have been constructed by Stephen Whitney, of Boston, on Beacon Hill, in 1807. Two years later Thomas Leiper built a tramway to connect his quarries on Crum Creek, Delaware County, Pennsylvania, with tidewater on Ridley Creek, a distance of about three-quarters of a mile, and there were similar structures at Falling Creek, Chesterfield County, Virginia, soon after 1810; at Bear Creek Furnace, Armstrong County, Pennsylvania,

¹*Niles' Register*, III, Addenda, p. 5.

in 1818; and at Nashua, New Hampshire, in 1825.¹ In 1822 a Boston editor recommended to the capitalists of his city the construction of an iron railway between Boston and Worcester. It is evident that this was chiefly thought of as a substitute for or addition to a canal.² In a governor's message in 1825, a railway was proposed between Boston and Albany as a substitute for the proposed canal to connect with the Erie and the Hudson River, but in the following year a recommendation in favor of a canal was sent. In 1829 a commission appointed to consider the matter showed the feasibility of the railroad and recommended an elaborate structure with horses as the motive or tractive power. References were made to the success of locomotive engines in England, but with the usual conservatism of cautious business men, in the face of radically new inventions, horse-power was recommended as cheaper under the conditions then existing in Massachusetts.

The Massachusetts report of 1829 was reviewed in two succeeding legislatures, with a view to action by the State, but nothing was done. Yet, although the State was thus unwilling to take the responsibility of building a road itself, it was willing that roads should be built by private agencies, and several companies were chartered, all for local roads out of Boston.

The State works of Pennsylvania and New York, already described, may be regarded on the one hand as means of extending the markets of Philadelphia, Albany, New York City, and other commercial centers, and on the other as means of attracting the western trade. The rivalry for this trade led, as has been noted, first to the improvement of natural waterways, and subsequently to the construction of canals. For large areas, even within these States, however, canals were unavailable. Moreover, transportation on canals was too slow for perishable goods, and all inland waterways in the North were subject to definite seasonal interruptions. Railways were not subject to the natural limitations which prevented the extension and utilization of waterways; no area was inaccessible to the railway, and even in direct competition with waterways the railway eventually proved its superiority by taking over the bulk of the traffic in many instances.

Railways were not, however, originally constructed as through routes to the West. As a rule, connection even between important cities within a State came only when roads radiating from one center entered territory tributary to another, and connections were made *nolens volens*. Colonel Blanding, one of the leading promoters of the ill-fated Charleston and Cincinnati project, it is true, had conceived a great road, but the country was not sufficiently developed to

¹McMaster, *A History of the People of the United States*, III, 494; Ringwalt, *Development of the Transportation Systems in the United States*, 68-69; Engineers' Club of Philadelphia, *Proceedings*, V, 418-420.

²*Columbian Sentinel*, April 27, 1822.

support the enterprise. The promoters of the Baltimore and Ohio likewise planned on a large scale, but they were hampered by the jealousy of the Potomac Canal and the Pennsylvania lines. The Erie was planned as a radically longer feeder to the New York market, and one that should forever put a stop to the intrusions of Philadelphia into the western New York valley, but it did not gain the confidence of the investing public. Boston merchants planned and financed a direct road to Albany to tap the western trade by offering a quicker and more direct route to the seaboard, while New York merchants were gravely deciding that no road could compete with the Hudson River. But schemes of these large dimensions did not underlie railroad construction generally in the earlier period.

THE CONSTRUCTION OF THE ROAD-BED.

In the actual construction of their roads, American engineers at first relied upon English experience, slight as that was. Commissioners were sent from the leading companies then in prospect to study the English experiments. Among the spectators at the contest at Rainhill were two American engineers, one representing the South Carolina Railroad; the other soon entered the service of the Delaware and Hudson Canal Company, which almost immediately placed orders for three English locomotives to be used on the Carbondale and Honesdale. They were put into use August 8, 1829, but the track was too light and the experiment was abandoned.

The first American-made locomotive was placed on the Charleston and Hamburg, which, in November 1830, began running an engine made at West Point, New York. Not only was this company the first to use an American-made locomotive, but it was the first definitely to replace horses with locomotives.

This decision was not without considerable risk, for it was long before the locomotive became an assured success. There were few of the early lines in this country which did not have an inclined plane. The South Carolina Road had one for some years after locomotives were adopted. On the Mohawk and Hudson, besides the inclined plane at Schenectady, there was another at Albany, and there was a series of four such planes on the Baltimore and Ohio that were considered among the wonders of the age.

The engineer who located a railway in those days had to adjust his plans to his financial necessity. Until through traffic grew to such an extent that it would warrant long-distance trains, it was not possible to make a heavy investment in a permanent way, and the local nature of the traffic made returns too small and precarious in comparison with the outlay for service. Hence, low first cost of construction was more important than economy of operation. Sharp curves, steep grades, and winding courses were characteristic of all early American railroads. The reason was twofold. First, the rail-

road quite generally followed old roads or trails. These in their turn were, as has been noted, often based on primitive Indian trails or in the Middle West on buffalo trails. Where the old roads were diverted from these somewhat haphazard lines, it was generally rather for the purpose of meeting the need of some farmer, or of some community of foresight whose influence was sufficient to cause a deflection, than with the intention of straightening the line. This combination of unscientific location in general, with responsiveness to particular local demands, introduced engineering difficulties unknown in England. To meet these difficulties the resources of American mechanics were taxed to the utmost, and many devices that seem almost amusing to-day were adopted to make the locomotive stick to the track. On the other hand, many devices of permanent necessity were evolved, such as swivel or bogie trucks, permitting sharp turns.

The construction employed on these early roads varied from solid granite—as on the Boston and Lowell, which was built for eternity, but which proved the destruction of all the rolling-stock employed on it—to light “strap-iron” rails—as on the Ithaca and Owego, where the rails were liable to curl under the weight of a somewhat heavier train than usual, and come up through the floors of the cars, to the consternation, if nothing worse, of the passengers.

The early locomotives were feeble affairs. According to a newsletter written in 1831, it was found necessary on the Mohawk and Hudson to withdraw the locomotive engines during the winter and put on horses instead.¹ In 1834, when a steam locomotive was placed in service on the Philadelphia and Columbia Railroad, the managers had so little confidence in it that they sent a horse-car with it and had relays ready for a case of breakdown. Moreover, their precautions were warranted, as is shown by the fact that passengers were at times called upon to get out and start the train with a push.² An early advertisement of this road remarks:

“The locomotive engine built by M. W. Baldwin of this city will depart daily when the weather is fair, with a train of passengers’ cars. On rainy days, horses will be attached.”

In fact, horses were retained, for emergencies, upon all the early American railways, for some time after locomotives had been introduced. Various contrivances of locomotion were tried out. The Charleston and Hamburg and the Baltimore and Ohio both experimented with cars propelled by sails, and with treadmill locomotives for horsepower.³ Upon the Baltimore and Susquehanna two cars were joined together by shafts of timber, and the horses which were hitched between were kept from falling by a broad belt of leather passed under their bodies and attached to the shafts.⁴

¹*American Journal of Science*, XXI, 385.

²McClure, *Old-Time Notes of Pennsylvania*, I, 123.

³Brown, *States-Rights and Free-Trade Almanac*, 1832, pp. 123–125.

⁴McMaster, *A History of the People of the United States*, VI, 90.

In time, and that not so very long, these experiments were seen to be futile, and with the final acceptance of steam for motive-power the long dispute over the relative merits of canals and railways came to an end. In 1825 the Pennsylvania Society for the Promotion of Internal Improvements in the Commonwealth, organized the previous year, took up the cause of railroads, under the leadership of Mathew Carey, and sent William Strickland to England to examine the transportation system of that country. His reports were of great service in shaping the popular mind in favor of railroads. One of these, under date of June 16, 1825, contained this significant sentence:

"In fact, the introduction of the locomotive has greatly changed the relative value of railways and canals; and where a communication is to be made between places of commercial or manufacturing character, which maintain a constant intercourse and where rapidity of transit becomes important, it can not be doubted that railways will receive a preference because of this very powerful auxiliary."¹

This statement, in the same form, was the one finally approved by the society, but the paragraph in the original report, written after Strickland had seen the performance of some of Stephenson's locomotives, in which he prophesied that railways were destined to supersede canals, was stricken out by the cautious society.² There is abundant evidence tending to show how slowly the popular mind came to an intelligent appreciation of the nature and possibilities of the railroad. To most people, and especially to the early legislator, the railway was an improved common road, to be ranked directly with the macadamized turnpike. The first railroad charters were patterned directly after turnpike charters. In fact, in some instances, the names were combined. Kentucky, in 1828, incorporated the "Lexington and Frankfort Turnpike or Railroad Company," and in the following year it chartered the "Lexington Railroad or Turnpike Company." At about the same time Maryland and Delaware authorized the New Castle and Frenchtown Turnpike Company to build a railroad, and to change its corporate name accordingly. Massachusetts, in 1832, chartered the "Hoosac Rail or Macadamized Road Company." A Boston paper thought this road might be built by small annual appropriations, in sections, and that if other roads should copy the idea there might in time be railways upon all of the great roads.³ As late as 1840 John Sherman wrote of the Sandusky and Mansfield:

"No one even thought of the movement by the railroad over vast distances, of grain, stock, and merchandise, but regarded the innovation as a substitute for the old wagon trains to the lakes."⁴

¹Strickland, *Reports on Canals, Railways, Roads, etc.*, made to The Pennsylvania Society for the Promotion of Internal Improvement, 31.

²Kane, "An obituary notice of William Strickland," in *American Philosophical Society, Proceedings*, 1854, VI, 28-32.

³*New England Palladium*, Feb. 3, 1826.

⁴Sherman, *Recollections of Forty Years in the House, Senate, and Cabinet*, I, 81.

ENGINEERING PROBLEMS.

With such imperfect ideas of the railroad and of its capacity for developing and increasing traffic, it is not surprising that cost of construction, of improvement to meet the requirements of an increasing traffic, and of maintenance on a permanent basis, ran far above first estimates. The railroads were required to handle business in a very different way from what had been intended, which increased both maintenance of way and transportation expenses. To counterbalance these expenditures, and the extraordinary expenses incidental to an experimental period, revenues were increased beyond expectation by the fact that the roads were able to handle a larger volume of traffic than had been originally thought possible and also to develop a large volume of new traffic.

Experiments in construction were continuous and generally costly. In the construction of the Baltimore and Ohio, from Baltimore to Point of Rocks, every known mode of track construction was tested. Other companies profited by these experiments, and went on to make other experiments of their own account. While English engineers followed closely after the models of Stephenson, Americans went to the other extreme, striving constantly after originality, with the result that improvement, though costly, was surprisingly rapid and of such a nature as to attract to this country European engineers in search of new ideas.¹

A flat iron bar resting upon longitudinal timbers was at first generally preferred, as its elasticity prevented the excessive jarring resulting from the use of the iron-faced granite construction. The original cost of the former was about one-half that of any other construction. The "indestructible" track of the Boston and Lowell, so ruinous to the rolling-stock, had its unyielding surface replaced in a few years by a more elastic construction. The Baltimore and Ohio had a similar experience. On this road also were employed certain engineers whose experience had been gained on the Cumberland Road. These men went to unnecessary expense for elaborate construction and made estimates with small regard for different conditions to be met.

So many experimental forms of roadway were built, often in an attempt to reduce first cost of construction, that millions of dollars were wasted. A million dollars was lost on a scheme to run 200 miles of the New York and Erie track on piles to avoid grading. Other roads were similarly built upon temporary structures. Another source of financial loss was the absence of a uniform gage. Stephenson had adopted that of the early English carts, which made the span between the rails 4 feet 8½ inches. In spite of the protest of other engineers in favor of a broader gage, Stephenson's preference became the standard, and so long as English locomotives alone were used on

¹Latrobe, *Baltimore & Ohio Railroad, Personal Recollections*, 14.

American roads, that was the only gage used in this country also. When, however, American engineers began to build their own locomotives they at once began to experiment with gages. There was a great variety of gages all over the country. The English standard was adopted in New England and the Middle West; in the South a 5-foot standard prevailed; in the Middle States there was a confusion of gages. Pennsylvania and Ohio had 7 different widths of track, 6 of which ranged between the standard gage and 4 feet 10 inches. Among prominent railroads constructed originally with other than a standard track are the Erie and the Albany and Susquehanna, which had a gage of 6 feet, as did also the Delaware, Lackawanna and Western.¹ Others had varying widths, until the growth of through traffic compelled standardization throughout the country.

TRAFFIC PROBLEMS.

In the controversy about the relative costs and merits of canals and railroads, the opponents of the railroads made much of the argument that to compete with a canal a railroad required a double track, so as to accommodate without interruption cars proceeding in either direction. When the first American railroads were built it was found possible to operate with a single track, supplemented by sidings at convenient distances. But in the absence of any system of signals, whenever a train failed to appear on time there was no means of finding out its whereabouts. On the Boston and Worcester Railroad trains left the terminals at the same time and met at South Framingham; and to insure against accidents or excessive delay in case of breakdown, a relay of horses was maintained at intervals of 5 miles along the route.² The Philadelphia and Columbia Railroad was also originally constructed with a single track. As this was a public highway on which anyone might place a car, no schedule of operation was practicable. To prevent disputes between teamsters, the officials set up posts halfway between terminals and made the rule that, when two cars met, the one that had passed the center post should have the right of way. The route was very crooked, and in many places it was impossible to see far ahead. Naturally there were many accidents through the efforts of drivers to prevent being turned back, and disputes over the right of way were so frequent as to make imperative the laying of a second track.³

Indeed, not until this second track was constructed, was it possible to put locomotives upon the road. At first the State furnished power only on the inclined planes. The shipper packed his goods into his own cars and engaged an engineer to haul them. By this system

¹Vernon, *American Railroad Manual*, 1873, pp. 88, 188.

²Currier, *Reminiscences*, 17.

³Roberts, *First Railroad over the Allegheny Mountains*, 72.

delays were frequent, much perishable merchandise lost, and traffic diverted to rival routes. In 1835 the State began to furnish the whole of the motive-power, but the cars were still owned by individuals or companies.¹ Early legislators had by no means intended that railroad companies should have any preferential or exclusive use of the means of transportation upon their tracks. With the exception of the Baltimore and Ohio, few railroad companies of this period were granted charters which did not expressly provide that the road might be used by any person who would comply with the necessary rules as to form of wheels, style of cars, and weight of loads. The old idea of the turnpike, the common road, was still dominant. It could not last, however, in the nature of things, though when, in 1836, Pennsylvania proposed to sell the motive-power to private parties, a great storm of opposition arose on the ground of danger to the public through the collision of vehicles belonging to rival companies. It was feared that passengers' lives might be lost by the malicious revenge of unscrupulous trainmen. A common economic argument of to-day also appears in a resolution passed at the time, expressing the belief that "under the direction of capable and efficient officers and agents it might be so regulated to be satisfactory to the transporters, and that if managed with proper economy it will not only maintain itself, but may also aid in diminishing the burden of the public debt."

A curious misconception retarded the development of the locomotive. The properties of friction involved in locomotive traction were not fully understood and in consequence engineers acted upon the assumption that the wheels of an engine would not stay on the track, but would slide and skid with more than a very light load, and that generally they would fail to propel the engine if there were any ascent. Much ingenuity was exercised to overcome this imaginary difficulty. Wheels were made with knobs and claws to take hold of the ground; a toothed rack was laid between the rails, into which a toothed wheel attached to the engine fitted. There were many other devices. Some used combinations of chains. The most remarkable scheme was the "mechanical traveler," a machine with jointed legs that pressed or "kicked" against the ground in the rear, and so propelled the engine. This contrivance was said to have a speed of $2\frac{1}{2}$ miles per hour and a tractive force of 4 horses.²

The properties of adhesion or friction which render such contrivances superfluous were discovered by means of experiment in 1814; but doubt persisted. Practically all of the early roads were cumbered with the device of the inclined planes. The Western of Massachusetts seems to have been the first road built through a hilly region

¹*American Railroad Journal*, V, 68, 96.

²Gillespie, *Manual of the Principles and Practice of Road Making*. 319.

without them. The Mohawk and Hudson, the Columbia, the Baltimore and Ohio, and the Charleston and Hamburg are all examples of roads seriously hampered in their ability to develop and handle traffic by this initial mistake.

GOVERNMENT REGULATION OF RAILROADS.

The construction of all the early railroads was violently opposed by the rival plank-road, turnpike, and canal companies. Existing companies feared the diversion of traffic and projected companies objected to sharing the scant supply of capital. Even in those cases where two lines were not prospective competitors for traffic they were competitors in the struggle for financial support. The Boston and Lowell project was frowned upon by promoters of the through line from Boston to the Hudson, who opposed all local lines as tending to divert investment funds. The claims of "vested interests" forced themselves into public notice when it was found that the railroads might compete with canals for heavy traffic. New York had incurred a heavy debt in the construction of the Erie Canal and mass meetings throughout the State demanded that railroad competition should not be allowed to affect the receipts from the canal, the motive being similar to that which has led to the passage of laws in force to-day in many States restricting the carriage of freight by electric lines. The Mohawk and Hudson had already been authorized to haul freight at rates not to exceed the combined tolls and transportation charges upon the canal, which is undoubtedly one of our earliest efforts at the regulation of railway rates.

In granting the charter of the Utica and Schenectady, in 1833, the legislature, in response to popular clamor, made a complete change of front, and prohibited carrying any property except the baggage of passengers.¹ The charter of the Attica and Buffalo, which was granted in 1836, authorized the handling of freight traffic,² and the powers of this company were conferred upon the Lewiston, the Syracuse and Utica, the Auburn and Rochester, and the Schenectady and Troy, in the same year. During that part of the year, however, in which the canal was in operation, the Syracuse and Utica was compelled to pay into the canal fund the amount which the State would have received in tolls if the freight had passed through the canal.³

It was not until 1844 that the Utica and Schenectady was permitted to carry freight, and then only during the suspension of navigation and upon the payment of canal tolls. By the act which conferred this privilege upon them, moreover, the requirement of canal tolls was imposed upon all through traffic upon the Syracuse and Utica,

¹New York, *Laws*, 1833, chap. 294, sec. 10, p. 466.

²*Ibid.*, 1836, chap. 242, sec. 19, p. 326.

³*Ibid.*, 1836, chap. 292, sec. 8, p. 424.

the Auburn and Syracuse, the Auburn and Rochester, the Tonawanda, and the Attica and Buffalo, throughout the year.¹ In 1847 the Utica and Schenectady was authorized to carry freight at all seasons of the year, but the provisions of the act were also extended so as to require canal tolls from the Schenectady and Troy and from the Albany and Schenectady (Mohawk and Hudson) upon all through freight. The general railroad incorporation act of 1848 required canal tolls from railroads parallel to canals and within 30 miles, and this was renewed in the act of 1850. In 1851, however, public sentiment towards the railroads had become more efficiently favorable and all restriction of this sort was removed.²

Similar difficulties were met in Pennsylvania. The many State canals strongly prejudiced the people at first against railway companies. The Pennsylvania Railroad was compelled by its charter to pay a tonnage tax of 5 mills per mile, due partly to popular antagonism and partly to the opposition of the Baltimore and Ohio, which thus held its competitor under a handicap until 1861.³

OPPOSITION OF RIVAL INTERESTS.

Among the most active opponents were turnpike and bridge companies and the stage-lines.⁴ The Utica and Schenectady, in 1833, was required to buy out the Mohawk Turnpike Company at \$22.50 per share, a corporation which had existed under a charter since 1800.⁵ The stage-lines represented a large investment of capital and employed many men. While many, both employers and employees, entered the new business with their knowledge of transportation, and began to build their business on the new foundation, others were not so adaptable, and these latter saw their business, and the country with it, going to destruction. The promoters of the Boston and Worcester Railway found their chief opponents in the owners of stage-lines and the people dependent upon them. At the beginning of the first winter, after the opening of the road, they decided to suspend operations rather than remove the snow; but this gave the stage-owners so effective an argument that train service was soon restored.⁶

Many other groups were hostile. Farmers feared to lose their market for horses, hay, and grain, and they foresaw also a rise in insurance rates to cover the increased danger of fire.⁷ Tavern-keepers who derived their custom from stage and horseback travel set every possible obstacle in the way of railroad construction. They were

¹New York, *Laws*, 1844, chap. 335, pp. 518-519.

²*Ibid.*, 1851, chap. 497, p. 927.

³Pennsylvania, *Laws*, 1846, No. 262, sec. 22, p. 323; McClure, *Old-Time Notes of Pennsylvania*, I, 136-142.

⁴McClure, *Old-Time Notes of Pennsylvania*, I, 123-124.

⁵New York, *Laws*, 1833, chap. 294, sec. 17, p. 468.

⁶Currier, *Reminiscences*, 15-16.

⁷Hill, *Beginning of Boston and Worcester Railway*, 543.

especially successful in Pennsylvania, on the route of the Conestoga wagon-track.¹ The wagon-drivers themselves joined the stage-lines in opposing the new means of transportation wherever possible. Many good people, too, feared moral decay and the effect on the reason of quiet folk whose habitual calm would be broken. The peaceable village of Newington, Connecticut, sent a remonstrance to the directors of the proposed road, begging that their orderly quiet should not be disturbed by the steam cars and consequent strangers.²

Economic demand, however, rapidly overcame all objections, and the energetic efforts of large and growing cities to secure control of the trade of all the country that could possibly be considered tributary, including not merely their own immediate local market but that of the rapidly developing West as well, pushed forward railroad construction at a rapid rate, in spite of difficulties.

¹McClure, *Old-Time Notes of Pennsylvania*, I, 123-124.

²Lamb, "Glimpses of the Railroad in History," in *Magazine of American History*, XXV, 442; also Kennedy, "The American Railroad," in *Magazine of Western History*, IX, 45-46.

CHAPTER XII.

THE TRANSPORTATION PROBLEM IN NEW ENGLAND.

Massachusetts, 319. Maine, 336. New Hampshire, 337. Vermont, 340. Connecticut, 343. Summary, 345.

MASSACHUSETTS.

The city of Boston, the commercial key to New England, was at a peculiar disadvantage as compared with its rivals. New York, Philadelphia, Baltimore, and Charleston were each provided with one or more natural water routes running far inland, and capable of being extended much farther by canals and other artificial means. In the case of Boston there was no river to form a natural avenue of trade, and the topography of Massachusetts prevented canals from becoming factors of importance in solving the problem of extending the Boston market.

At about the time of the completion of the Erie and Champlain Canals, the New England States were agitated with canal projects by sheer force of imitative rivalry and with little appreciation of their practicability or limitations. One expensive canal was actually built in Connecticut, but it proved an utter failure and ruined its promoters. The Middlesex Canal, in the immediate neighborhood of Boston, did not at all come up to the expectations of its stockholders, since it proved to be too slow for passengers and relatively unimportant for freight. Visions were at one time entertained of an all-canal communication between Boston Harbor and the Connecticut River, and thence to the Hudson, and surveys were even made, but the enterprise was abandoned as too costly, even if it were otherwise practicable. Three canals which were built, namely, the Blackstone from Worcester to Providence, the Hampshire and Hampden, and the Farmington from Northampton to New Haven, had the unexpected effect of diverting the commerce of the State outside its borders.¹ Except for those experiments, New England turned more naturally to consider land routes, and fortunately the railway had been so far perfected as to provide an agency of transportation adapted to the contour of the country. In those sections where capital invested in a canal was a dead loss, liberal dividends were realized on the cost of a railroad.²

In 1825, the year of the opening of the Erie Canal, the governor of Massachusetts sent a message to the general court, in which the railways were suggested as means of communication deserving of careful consideration as affording a promise of increased facility to transportation.

¹ "The Railroads of Massachusetts," in *Monthly Chronicle of Events*, I, 188-189.

² "Railroads in New England," in *Hunt's Merchants' Magazine*, XXV, 285, Sept. 1851.

The only difficulty, in his opinion, was that the severe frost might increase the expense to such a degree as to discourage their introduction.¹ In 1827, a year before Stephenson's successful trial of the *Rocket*, a report concerning a railway westward from Boston was made by a committee of the lower house, and an investigation was made into the practicability and expediency of establishing a railroad over one or more routes to the Connecticut River.²

It should be borne in mind that "railways" were not, in those days, the stretching miles of steel now pictured by the word railway. There are, in fact, several instances of "railways" much lauded in the literature of those times that were properly "wheelways," being parallel rows of stone or wood, designed to facilitate the passage of wagons rather than of the iron monsters whose coming was so disconcerting to quiet New England. So in Massachusetts, the first "railway" was a short road for carrying gravel from Beacon Hill to Charles Street.

The surveys for roads to the Connecticut River were continued in 1828, under the superintendence of the board of directors of internal improvements. Two entire routes from Boston to the Hudson River, one ending at Albany and the other at Troy, were surveyed, and two from Boston to Providence, besides several shorter routes, and an elaborate report was made, accompanied by maps and plans. This report claimed to demonstrate the practicability of all the routes, and recommended to the legislature the adoption of measures for the construction of railroads from Boston to the Hudson River and Providence. No results came, however, until June 1830, when several charters were granted, but all proved abortive because of the disinclination on the part of the public to take up the stocks.

With an eye for future trouble, these charters took special precautions against swollen profits. The roads were given power to levy such tolls as they should see fit, but the right was reserved to the legislature to reduce the charges at given periods in case the net income from all sources exceeded 10 per cent per annum on the cost of the road. In such cases rates were to be lowered to a point which would put the return at 10 per cent only. In the case of the Boston and Providence, the time for the first adjustment of the rate of return was four years after the completion of the road, and adjustments were to be made quadrennially thereafter; with the Boston and Worcester the right of reduction was limited to 10 years. The legislature reserved the right also to purchase the roads for the State at the expiration of 20 years from the date of their completion. The exact provisions of this early act are worth quoting:

¹Extract from Governor's Message, June 1825, quoted in Hasse, *Index of Economic Material in State Documents, Massachusetts*, 227.

²Hale, *Remarks on Practicability and Expediency of Establishing a Railroad on one or more Routes from Boston to the Connecticut River*.

"§6. *Be it further enacted*, That it shall be in the power of the government of the commonwealth, at any time during the continuance of the charter of the said Boston and Worcester Rail Road Corporation, after the expiration of 20 years from the opening for use of the Rail Road, therein provided to be made, to purchase of the said Corporation the said Railroad, and all the franchise, rights and privileges of the said Corporation, by paying them therefor the amount expended in making said Rail Road, and in case, at the time of such purchase, the said Corporation shall not have received a net income equal to 10 per cent per annum on the said expenditures, from the time of payment thereof by the stockholders, by paying the said corporation such additional sum as, together with tolls and profits of every kind which they shall have received from the said Rail Road, will be equal to a net profit of 10 per cent per annum on the cost of said Rail Road, from the date of payment thereof by the stockholders of the said Corporation, to the times of such purchase."¹

An interesting type of stipulation was that of the Boston and Worcester and the Boston and Lowell Roads, which agreed that no other railroad should be authorized from Boston or any of the adjoining towns to any point within 5 miles of the western terminus of the road.

Under the stimulus of popular enthusiasm and financial support, railroad construction in Massachusetts proceeded quickly. Beginning with a few lines radiating from shipping-points, and short local connections in the interior, a vast net soon spread. From Boston as a center, lines were built to Lowell, Worcester, and Providence before the year 1835. Within the next 5 years the construction of numerous subsidiary roads, built generally by independent companies, almost doubled the mileage and formed a compact system. The New York, Providence and Boston reached from Boston to Stonington in 1837, and the Nashua and Lowell, the Eastern, and the Western Roads were completed shortly after 1840. In contrast to other sections, railroad construction in New England was not checked by the depression following the panic of 1837. One writer, in fact, considers the panic an advantage, because it put an early and effectual end to the talk of canals.²

By 1841 the system of railroads radiating from Boston was in full operation. Connections were made for New York at Providence and Stonington by boat. The passage by train from Boston to Providence was made in a little less than 2 hours. From Boston to Norwich, on the Willimantic, 104 miles, occupied 4½ hours, and the trip from Boston to Worcester, including 10 stops to receive and discharge passengers, was made in 2½ hours.

Four distinct groupings of roads may be seen, northerly, southerly, westerly, and northeasterly, each group consisting of the works of three or more independent companies, and each connecting with roads extending beyond the borders of the State. To the north extended the Boston and Lowell, from which the Boston and Portland and the Nashua and Lowell extended into New Hampshire. The second or

¹Boston and Worcester Railroad Corporation, *Report of the Directors*, 1832, p. 40.

²Hadley, *Railroad Transportation*, 33; cf. also Burton, *Financial Crises*, 280.

southern group consisted of the Boston and Providence as the main stem, with branches to Taunton and extensions from Taunton to New Bedford and from Providence to Stonington, and the Old Colony Road to Plymouth. The third or western group centered in the Boston and Worcester, with its extensions into Connecticut by the Norwich and Worcester, and to New York by the Western, the Albany and West Stockbridge, and the Hudson and Berkshire. The fourth group comprised the Eastern Railroad, with its four branches, and extensions into Maine and New Hampshire by the Eastern Railroad of New Hampshire and the Portsmouth and Portland.

The first of these groups, taking them in chronological order according to the date of their primary road, was the northern, originating in the Boston and Lowell, chartered in 1830, and eventually including the New Hampshire lines. The capital of the original road was limited by its charter to \$500,000, in 1,000 shares of \$500 each. In 1833 the general court authorized an increase to \$600,000, in 1834 to \$1,200,000, in 1836 to \$1,800,000, and in 1838 to \$2,100,000.¹ Construction was commenced in the summer of 1831 and the whole line was open for use June 26, 1835. It was built "for eternity," Granite cross-ties were used as supports for iron "edge-rails," and, as in the case of the Baltimore and Ohio, the structure was so unyielding that locomotives and rolling-stock were continually breaking down and the whole track had to be replaced with more elastic materials within a few years.

There was some opposition to the road from the promoters of the road to Worcester, who feared the competition for such capital as was available for investment. Its ability to compete with the Middlesex Canal for freight aroused both surprise and resentment. It received no aid from the State, but was granted exclusive rights to the territory for a period of 30 years. The road was largely financed by the manufacturers of the Merrimac River Valley, who subscribed, as in many similar cases, more with a view to the indirect than the direct returns upon the investment; but the road proved to be one of the most productive of its length in the United States, averaging a return to its stockholders of 6.75 per cent per annum.

In 1837 the Nashua and Lowell Road, chartered April 16, 1836, in Massachusetts, and June 26, 1835, in New Hampshire, was put under construction. It was about 15 miles long, and completed on December 23, 1838. It was built chiefly by stock subscriptions, but also received a loan from the State of \$50,000. The two companies were permitted to consolidate in 1838. In 1833 the Boston and Portland was chartered to build a branch to the New Hampshire State line. It received State aid to the amount of \$150,000. The section from

¹Poor, *History of Railroads and Canals in the United States*, I, 97; Massachusetts, *Laws and Resolves of the General Court*, 1830, chaps. 93-95; *Senate Bill and Report Respecting the Boston and Lowell*, in Massachusetts, *Legislative Documents*, 1837, *Senate Doc. No. 83*, p. 8.

Wilmington on the Boston and Lowell to Andover, 35 miles, was begun in 1835 and began operations in 1836.

Three other corporations, the Boston and Maine of New Hampshire, the Maine, New Hampshire and Massachusetts in Maine, and the Boston and Maine "Extension" of Massachusetts, were, in 1842, consolidated with the Boston and Portland under the name of the Boston and Maine. The sections from Andover to Exeter had been opened in 1840, from Exeter to Dover in 1841, and from Dover to Great Falls, making a junction with the Portland, Saco, and Portsmouth, on February 23, 1843.

In 1844 a charter was obtained for the construction of an independent line to Boston, opened in 1845. In 1843 the road executed a joint lease with the Eastern Railroad to the Portland, Saco and Portsmouth, and with the opening of the separate line into Boston became more closely affiliated with the eastern group.

The second road opened in the State, the primary road of the second group, was the Boston and Providence, chartered June 22, 1831. The first section, 18 miles long, from Boston to Sharon, was commenced in the latter part of 1832 and the whole road was opened in June 1835. Like other Massachusetts roads, this became too profitable and too conservative in its management for the proper accommodation of the public. The road maintained that its lack of progress was due to the State law forbidding stock dividends. It was already earning up to its legal limit of 10 per cent, and it feared that if its income were increased it might be made the subject of hostile legislation. It was practically continued to Stonington by the New York, Providence and Boston, chartered in Rhode Island in June 1832, and the New York and Stonington, chartered in Connecticut in May of the same year. The two companies were merged in July 1833, and the road was opened to the public in the fall of 1837. It was 47 miles long and connected at Stonington with boats for New York. The road was substantially built, laid with heavy T rails, and cost over \$2,000,000. There was a daily train service from Boston to Stonington, although the roads were not united for through service until 1847. The trains from Boston started on a fixed schedule, while those from Providence waited for connections with the Stonington Road and the steamers from New York. The resulting irregularity, together with the absence of any means of communication such as the modern telegraph system, prevented the trains from having any knowledge of each other's whereabouts and was the cause of many accidents. In 1837 alone the Boston and Providence paid out \$25,000 in damages for persons injured in such accidents.¹

An attempt was made prior to 1840 by an independent company to operate cars and engines over the tracks of the Boston and Provi-

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 281.

dence. As in the case of most roads, the charter of this one contained a provision opening the road to vehicles other than those of the company. Accordingly the Seekonk Company was chartered in 1836, and organized shortly after, to build a road on the Massachusetts side of the Seekonk River, with intention of owning cars and engines, and running them between the cities over the tracks of the Boston and Providence. The latter road objected and carried the matter to the legislature of Rhode Island, which decided, by a very narrow majority, that the Boston and Providence was bound to admit the trains of other companies upon its tracks only under such regulations and at such charges as it saw fit to establish. Thus defeated, the Seekonk Road sold out to its rival, and became the Seekonk Branch. The decision became an important precedent in the history of transportation, since in effect it gave a company complete control of its own trackage to the exclusion of any other company. The highway theory was giving way to the theory of exclusive corporate control.¹

In 1845 another important step was taken in the same direction, when the Massachusetts legislature passed an act forbidding any railway to use the tracks of another company in the sense of entering upon them at will with locomotives and cars, although commissioners appointed by the State might compel one road to permit use by another for the sake of through connection, at a reasonable compensation. This legislation, with the Seekonk decision of 1839, seems finally to have disposed of the highway theory.²

The Taunton Branch Railroad, incorporated April 7, 1835, was authorized to construct a railroad from Taunton to the Boston and Providence Road at Mansfield. Construction was commenced in 1835 and completed in August 1836. It was a trifle over 11 miles long, and capitalized at \$250,000. The extension to New Bedford was built by a company organized April 13, 1838, under the title of the "Old Colony Railroad Corporation," with a capital of \$400,000. The name was changed in 1839 to that of the New Bedford and Taunton Railroad. The road was put under construction in May 1839, and opened July 2, 1840. It seems to have been a very profitable road, its dividends running steadily from 6 per cent in 1841 to 7½ per cent in 1853.

In 1844 two closely connected lines of road, one to Fall River and one to Plymouth, were chartered. The Fall River road was a consolidation of three minor roads, *i. e.*, the Fall River Branch Company, incorporated March 4, 1844, to construct a railroad from Fall River to Myrick's, where it joined the Boston and Providence; the Randolph and Bridgewater, incorporated March 25, 1845, to construct a railroad from Bridgewater to the old Colony Road at Braintree or Quincy;

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 281.

²"An Act to Regulate the use of Railroads, in Massachusetts, in *Acts and Resolves of General Court*, 1845, chap. 191, p. 513.

and the Middleboro Company, incorporated on March 26, 1845, to construct a railroad from Bridgewater to the Fall River Branch at Myrick's. The three were consolidated under the charter of the last-named road on April 16, 1846, with a total share capital of \$1,050,000. The section from Fall River to Myrick's Station was opened for public use June 9, 1845. The whole road to its junction with the Old Colony in Braintree was put into operation on December 16, 1846, and was absorbed by the Old Colony, the second of the two lines referred to, in 1854. The latter road had been incorporated in March 1844, to build a road from South Boston to Plymouth, and the road was opened on November 19, 1845.¹ The road was 37¼ miles long, and capitalized at \$1,964,000. It earned dividends of 6 and 7½ per cent in the years 1846, 1847, and 1848, then for two years paid no dividends, and in 1851 paid 2 per cent. The failure to pay dividends was doubtless due to heavy losses sustained by the road in operating its two branches, the South Shore and the Dorchester and Milton.

In 1846 the Old Colony backed the Cape Cod Branch, which ran from Middleboro on the Fall River Road to Sandwich and thence to Hyannis in 1853, where it connected with steamers to Nantucket. The Old Colony had the reputation, according to contemporary papers, of being exceedingly well-managed and of charging very low rates. Fares averaged about 3 cents per mile. Its running expenses were not heavy, and the salaries paid to officers were low. The road, however, did not run through a notably prosperous section of country, it had a great many stations on its route (34 in 37 miles), and it was hampered by a large floating debt. In 1849 the road experienced a period of depression and, contrary to expectation, was not markedly aided by the opening of several branches to near-by towns. For a number of years after 1851 the road paid no dividends. The report of the road for 1850 shows a total of receipts of \$275,066.58, with expenses amounting to \$167,438.71. In the same year the company funded its floating debt by issuing additional stocks and bonds, making an aggregate capital and funded debt of \$2,293,800. The next year showed the company still in difficulties, in spite of the reports of increases in population and industry in the towns along its lines.²

The western group of railways originated with the Boston and Worcester Road, which was chartered June 23, 1831. Work began in August 1832, and the first section of 9 miles, from Boston to Newton, was opened April 16, 1834. It was on this road that locomotives were first used in Massachusetts. The entire line to Worcester was opened July 3, 1835, the year in which also the Boston and Lowell and the Boston

¹*Hunt's Merchants' Magazine*, XVII, 627, Dec. 1847; XXII, 463-467, April 1850.

²*Ibid.*, XXII, 241-242, Feb. 1850; cf. also Old Colony Railroad Corporation, *Report of the Committee for Investigating the Affairs of the Old Colony Railroad, appointed by the Stockholders*, Dec. 26, 1849, pp. 13, 20, 162, 163.

and Providence were opened. The charter was the first in the State to expressly provide for locomotive power. Other provisions were that no other road leading in the same direction might be built within a distance of 5 miles from its route, and also that the State might purchase the road after 30 years from its completion, on paying the cost of construction and such sums in addition thereto as would be equal to dividends of 10 per cent. There were no other limitations. The road was capitalized in 1842 at \$2,400,000,¹ and represented investment largely by the merchants of Boston.

All of the early objections made to railroads were urged against the building of the Boston and Worcester. The first charter of the road in 1829 had failed to receive support, partly because an earlier canal project was still in the minds of investors, who did not wholly give up the idea that waterways might be superior to railways until after the success of the Boston and Lowell in diverting traffic from the Middlesex Canal. Owners of stage-lines, and innkeepers, farmers, and others dependent upon stage-lines, were bitter opponents of the road, foreseeing that their businesses might be, as indeed they were in many cases, ruined by the new enterprise, and specifically by the readjustments made necessary in consequence of the increased distance between stopping-points.² The difficulties of the first year or two tended to perpetuate popular distrust. Other difficulties were incident to the single-track system. One of the objections urged against railroads was the necessity of having a double track, to avoid accidents. The Boston and Worcester, however, as well as other early roads, found it possible at first to operate with a single track and sidings. Trains left both terminals at the same time, meeting at South Framingham. In spite of all difficulties, however, and in the face of adverse predictions, the road earned dividends averaging about 7 per cent.³

The increase of its business soon made it necessary to equip the road with a double track, which was completed in 1843. The extra cost was in part met by the creation and sale of 2,000 new shares, increasing the capital of the road to \$2,900,000. The same year the road paid 6 per cent in dividends; in 1844, 7½ per cent; in 1845, 8 per cent; in 1846, 8 per cent; in 1847, 10 per cent; in 1848, 8½ per cent; in 1849, 6 per cent; a total of 48 per cent in 6 years. There was a slight decrease in the freights carried in 1849, attributed to the depressed state of manufactures. During the period, 2,548,000 passengers had been carried, 8 had been killed, in addition to 7 employees and "6 other persons" who lost their lives in the trains or on the right-of-way.⁴

¹*Niles' Register*, LXII, 308, July 16, 1842; cf. also Boston City Council, *Railroad Jubilee. An account of the celebration of the opening of railroad communication between Boston and Canada*, 233.

²Boston and Worcester Railroad, *Reports*, especially for 1832.

³*Hunt's Merchants' Magazine*, VI, 94, Jan. 1842; V, 185, Aug. 1841.

⁴*Ibid.*, XXII, 568-569, May 1850.

TABLE 41.—Receipts and expenses of Boston and Worcester Railroad, 1842-1849.¹

Year.	Receipts.					
	Length. ²	Cost.	Passenger.	Freight.	Mail, etc.	Total.
	<i>miles.</i>					
1842	45	\$2,764,396	\$186,610	\$148,188	\$14,408	\$349,206
1843	45	2,836,169	207,262	162,656	13,441	383,367
1844	45	2,914,078	234,633	175,996	15,783	426,413
1845	45	3,212,264	241,219	233,505	12,732	487,456
1846	54	3,485,232	279,793	260,165	14,754	554,712
1847	59	4,113,610	304,580	374,663	42,927	722,170
1848	67	4,650,393	332,886	359,073	24,325	716,284
1849	69	4,908,332	330,606	331,338	41,417	703,361

Year.	Expenses.				Net income.	
	Road-bed.	Motive power.	Miscellaneous.	Total.	Amount.	Per cent on cost.
1842	\$51,457	\$19,073	\$107,980	\$178,510	\$170,696	6.20
1843	44,502	28,559	117,488	190,549	192,818	6.80
1844	49,158	57,337	124,754	231,249	195,164	6.73
1845	69,444	51,263	129,022	249,729	237,727	7.40
1846	47,444	67,262	172,170	286,876	267,836	7.68
1847	65,195	91,141	225,650	381,986	340,184	8.27
1848	50,520	61,512	269,886	381,918	334,366	7.88
1849	86,883	72,298	246,370	405,551	297,810	6.07

A road from Worcester to Norwich was contemplated very early in the history of Massachusetts railroads. It was chartered as the Boston, Norwich and New London, in Connecticut, in May 1832, and as the Worcester and Norwich in Massachusetts in March 1833. The companies were consolidated as the Norwich and Worcester in 1837. Construction was immediately begun and the road was open for business in 1840. It declared but two dividends in the first 10 years of its existence, of 3 per cent each, in 1844 and 1845.³ It is said that the railway post-office grew out of the car put on the Norwich and Worcester for the use of a clerk in the Post Office Department, that he might receive and assort mail on the route. This was in 1840.⁴

In 1844 two companies were chartered by the legislature of Massachusetts and Rhode Island, authorized to consolidate into one company and build a road from Worcester to Providence, a distance of about 44 miles. The two became a single corporation November 25, 1845, and construction was begun in the same year. The company

¹The figures are given as printed in *Hunt's Merchants' Magazine*, XXIII, 125, July 1850, although apparently not quite accurate.

²Including branches.

³*Hunt's Merchants' Magazine*, XXII, 465, April 1850.

⁴*Niles' Register*, LVII, 320, July 18, 1840.

was authorized to purchase the Blackstone Canal between Providence and Worcester, and the road was located as far as possible on its banks. The Rhode Island section was opened for business in September and the northern section in October of 1844. The capitalization of the road was originally \$1,000,000, later increased to \$1,550,000. It was financed almost wholly by Rhode Island capitalists. The opening of the road was delayed over a year on account of the excessive price to which iron rails had risen.¹ The road was opened formally October 25, 1847, on which occasion a special excursion train of 20 cars, drawn by 2 locomotives, and carrying a pleasure party of 1,500 persons, left Providence at 8 o'clock in the morning, dined at Worcester, and returned to Providence about 5 in the afternoon, after a very pleasant trip. They were saluted on the way by discharges of artillery and similar expressions of welcome, and were greeted on their return to Providence with ringing of bells, firing of guns, and great demonstrations of rejoicing.² The road seems to have been prosperous and to have met its obligations promptly. Fares on the road averaged about 4 cents per mile. In 1849 two dividend payments were made, of 4 and 3 per cent, respectively.

A third road was speedily added to this growing system around Worcester, the Worcester and Nashua. It was a consolidation of two sections chartered respectively by New Hampshire and Massachusetts in 1844 and 1845. The union took place in 1846, under the name of the Massachusetts Company, and the road was opened over its whole length of 54½ miles in 1848. The first subscription to the capital of the road amounted to \$754,600, in \$100 shares. Of these, the Norwich and Worcester subscribed \$250,000, but subsequently paid only \$100,000 and thus abandoned the subscription, reducing the share capital to \$504,000. The Fitchburg and Worcester was chartered and built about the same time. It united Fitchburg with Sterling Junction on the Western Railroad, a short distance from Worcester, and was a very profitable road.

The Western Railroad of Massachusetts was planned as a part of a through line to Albany. The two cities, Boston and Albany, each reaching out into the territory lying between, were to be connected. Worcester opposed it, fearing to become a mere way-station if the road extended farther west. Boston feared that roads to and beyond Springfield would send trade down the Connecticut to Springfield. The result was that, though chartered February 15, 1833,³ construction was not started until 1837, when the road received a grant of \$4,000,000 from the State. The cost of the road in January 1842, just after trains had been put into operation over its whole line, was

¹ *Niles' Register*, LXVIII, 220, June 7, 1845.

² *Hunt's Merchants' Magazine*, XVII, 630, Dec. 1847.

³ *Massachusetts, Acts and Resolves of the General Court*, 1833, chap. cxvi, p. 660; cf. also *Western Railroad Corporation, Report*, 1836, pp. 17-23.

\$5,235,025, or \$44,024 per mile.¹ The road was built in two sections, on either side of the Connecticut River, joined by a bridge at Springfield. The first section, 54½ miles in length, was opened October 23, 1839.² It had cost at that time \$2,016,969. The western section, from Springfield to Chester Factories, was opened on May 24, 1841, and on September 13 of the same year the line was extended to Washington Summit and across the summit to the State line on October 4. From that time regular trains of passenger-cars were run over the line, in connection with the Hudson and Berkshire Railroad from Springfield to Hudson. Trains in connection with the Hudson and Berkshire road had been previously run, from May 4, over the westerly portion of the Western Road to Pittsfield. Work on the Albany and West Stockbridge Railroad was so far completed that on December 4 it was ready for the reception of locomotives from Greenbush to Chatham Corners, a distance of 25 miles, and by the use of a portion of the Hudson and Berkshire Railroad for a distance of 15 miles, under a temporary lease, a continuous line of railroad was formed from the State line to the Hudson River, opposite Albany.³ Thus the chain between the Hudson and the Massachusetts port was completed by joining roads belonging to the systems radiating from Albany and Boston respectively. The stock of the Albany and West Stockbridge was taken over by the Western Railroad, and work on it was pushed to completion as a necessary part of the through road. The connection with Albany by way of the city of Hudson seems to have been of brief duration, and the more direct route by Pittsfield to have been used as soon as control of the Albany and West Stockbridge was obtained. Regular trains ran over the whole road twice a day.

The construction of the Western Railroad shows the abandonment of the "solid" construction of the Boston and Lowell, the use of the heavier rail, and more attention to the road-bed. The maximum grade on the eastern section, from Worcester to Springfield, was 60 feet per mile for 2½ miles. The rail used throughout the Western road was the "edge" or flange rail, 3½ inches deep, with a base 4 inches wide, and a weight of 55 pounds per yard, as against the 40 and 47 of the Boston and Worcester and the light rails of the Boston and Lowell. These rails were laid on chestnut sleepers 7 feet long, 7 inches deep, and 7, 10, or 12 inches wide. The sleepers were laid in turn on hemlock sills, 8 inches wide and 3 inches thick. Spikes, of which there were 12 to each rail, were 5½ inches long, $\frac{9}{16}$ of an

¹*Hunt's Merchants' Magazine*, VI, 94, Jan. 1842; *Massachusetts, Acts and Resolves of the General Court*, 1837, 1838, etc.

²*Western Railroad Corporation, Report*, 1840, p. 4.

³"The Western Railroad of Massachusetts," in *Monthly Chronicle of Events*, II, 253; also Guild, *A Chart and Description of the Boston and Worcester and Western Railroads*; *Western Railroad Corporation, Annual Report*, 1842, p. 5.

inch square, and weighed $8\frac{1}{4}$ ounces. At the end of each rail was used a cast-iron chair or splicing-plate, weighing 10 pounds. Preparatory to laying the rails, in all places where the earth was argillaceous or loamy, it was removed to a depth of $2\frac{1}{2}$ feet below the grade to the width of 10 feet and its place supplied by gravel or sand, so that the sills and sleepers were embedded in it.¹ Six engines weighing 11 tons each, costing \$7,000 apiece, were built at Lowell for passenger service on the road, also several freight-engines weighing 14 tons were built, but were not put into service immediately.

The road was a financial success from the beginning. The section opened first, from Worcester to Springfield, at once developed enough way travel and freight to pay expenses, and very soon a considerable net revenue in addition.² Each section as it was opened was practically an independent road, and for a time this independence seems to have been incidentally advantageous. The business caused by the break in transportation at Springfield and Worcester, for example, developed population, which reacted on the railroads by creating ampler markets for and new demands upon the surrounding country. Until the demand for through unbroken service increased, the local service rendered under independent operation of the sections benefited both the railroads and the territory through which they ran.

In the eagerness for a through route to the West, Boston found rivals in both Albany and New York. Before the War of 1812, Boston had been the center of ship-building and of the foreign trade, but the triple calamity of the embargo, the blockade, and an injurious tariff put an end to the city's commercial supremacy and forced its capital into other lines of development. Its activities then came to depend on manufactures and internal commerce. As the first move in the contest came the Western Railroad, which connected both with the Erie Canal and with the westward-pushing railroads. So eager were Boston people for an all-rail route to Buffalo that meetings were held in that city in 1840 to raise money for the construction of the Attica and Buffalo Road,³ and there was great satisfaction upon the completion of the road to Buffalo in 1843. For a time the effect of prospective railroad competition upon New York was apparently not appreciated in that city, where so much security was felt in the possession of the matchless "Grand Canal." Thus the promoters of the New York and Erie Railroad, starting in 1831 with the primary purpose of opening up the trade of the isolated valleys of the southern tier of counties, were unable to attract sufficient support, until they could point out the necessity for a railroad directly tributary to the city of New York as the one means of preserving its commercial

¹"Western Railroad of Massachusetts," in *Monthly Chronicle of Events*, I, 260-268.

²"Western Railroad of Massachusetts," in Hazard, *United States Commercial and Statistical Register*, III, 304, Nov. 1840.

³*Niles' Register*, LIX, 86, Oct. 10, 1840.

supremacy.¹ The effect of their argument was at once shown in the refusal of New York capitalists to subscribe to the stock in the Western Railroad of Massachusetts, though before that time a great deal of the capital of the metropolis had found its way into New England ventures.² New York began to see that the completion of the road to Albany would make the entire canal system of the State tributary to Boston. After the completion of the Buffalo connection, Massachusetts at once became increasingly prosperous and the progress of New York was checked. Statements were published to show that the value of New York real estate had fallen off with the opening of the Western Railroad, and an agitation was begun which resulted in the building of the railroad from New York to Albany and Buffalo, but through Ogdensburg and the Welland Canal a trade-route was opened which was free from the oppressive canal tolls which were exacted upon the railroad between Albany and Buffalo.

The funds for the Western were raised in part by a very thorough canvass of Boston and the towns along the route, and in part by State aid. The capital authorized by the charter amounted to \$6,500,000, in \$100 shares, of which 51,500 were sold. In addition, the company received \$4,319,520 sterling bonds of the State of Massachusetts, bearing interest at 5 per cent and constituting a first mortgage. These bonds were issued in five different issues, as the road progressed, from April 1, 1838, to August 1, 1841.³ To provide funds for building the line in New York, the city of Albany issued \$1,000,000 in 6 per cent bonds, in payment of a subscription covering the capital stock of the Albany and West Stockbridge Railroad Company, the proceeds to be used for the express purpose of building this road under a charter from the State of New York granted in 1836. The Albany and West Stockbridge road formed that part of the Western Railroad lying outside the State of Massachusetts. Its construction was begun in 1838 and finished in 1842. The road was leased to the Western Railroad for the term of its charter and subsequent renewals, and by the terms of this lease the stock held by the city of Albany as security for payment of its bonds and constituting the entire stock of the road became the property of the Western Road upon payment of the bonds. In return for its financial assistance the State had the right to appoint at first 4 and later 5 of the 8 directors,⁴ thus gaining absolute control of the policy of the road, an interesting fact in view of the unprogressiveness which the road later manifested.

The progress of the road was watched with great interest by the various papers of the country, many of which were carrying on a

¹Mott, *The Story of Erie*, 45; Bloomfield, "Influence of Internal Improvements on the Growth of Commercial Cities," in *Hunt's Merchants' Magazine*, XIII, 261, Sept. 1845.

²Bliss, *Historical Memoir of the Western Railroad*, 28 *et seq.*

³*Niles' Register*, LIX, 358, Feb. 6, 1841; LX, 37, March 20, 1841.

⁴*Ibid.*, LX, 37, March 20, 1841.

campaign of education in behalf of the railroads and their promoters.¹ *Hunt's Merchants' Magazine* gives a detailed account of the tariffs in force on the road at its opening over the whole line from Boston to Albany. The freight tariff in particular was worked out in considerable detail. Passenger rates were in two classes, and fares for the whole distance from Boston to Albany ran from \$5 to \$4 for the first class and two-thirds of these sums for the second, *i. e.*, under 4 cents per mile for the first class and about 2 cents for the second. A careful schedule for merchandise was also worked out, with rates both for through and for local traffic.² Less than a year from the opening of the through road, *Niles' Register* predicted that by the opening of the Western Railroad Boston had opened a door to a trade greater than the whole commerce of the United States by American vessels in exports of domestic origin. In the first 11 months of operation the gross receipts were over \$421,000.³ The number of through passengers, however, did not keep up to the standard set by the traffic of the opening months, and the cause was attributed to the high rates of fare. As the people of the State were directly interested in the road and in its policy through the directors of the road appointed by the State, the matter became a subject of popular agitation, and demands were made for lower fares. The reductions were to be made on through, not on local fares, but the Worcester was unwilling to join in any reduction, and there were no directors on it responsible to the people and amenable to their wishes. In consequence, any reduction on through rates must be made entirely at the expense of the Western Railroad. The question was elaborately discussed in the newspapers, and became a factor in State politics in the elections of 1842. The ticket pledged to low fares won, and in April 1843 the first-class fares were reduced to \$4, and the second-class fares to \$2.70. In October of the same year the results seemed to be that, while there was little change in the local passenger traffic, comparing the months from April to October with the same period in the previous year, through traffic nearly doubled. This increase showed itself very promptly, amounting in May to 79 per cent over the previous year and in June to 105 per cent. In addition to lower passenger fares, the rates on through freight were lowered, with a trebling of the business in a very short time.

The Boston and Worcester, seeing the success which it was sharing, tried lower rates, with the same marked success, on a special train between Boston and Newton, on which it charged 2 and 2.5 cents per mile. The Philadelphia and Reading and other roads also seem

¹*Niles' Register*, LX, 186, May 22, 1841; LXI, 102, Oct. 16, 1841.

²*Hunt's Merchants' Magazine*, VI, 92-93, Jan. 1842; Western Railroad Corporation, *Annual Report*, 1846, pp. 7-11.

³*Niles' Register*, LXIII, 228, Dec. 10, 1842; *Hunt's Merchants' Magazine*, VIII, 187-188, Feb. 1843.

to have followed the same example.¹ In spite of heavy expenses, including \$35,000 for clearing away snow, the running expenses of the Western did not quite equal 50 per cent of the gross income at the end of the year.

TABLE 42.—Receipts, expenditures, and passenger traffic of the Western Railroad for a series of years ending in 1847.²

Year.	Amount received from all sources since road was opened.					
	Passengers.	Merchandise.	Mail, etc.	Total.	Expenses.	Balance of receipts.
³ 1839	\$13,472.94	\$4,136.21	.....	\$17,609.15	\$14,380.64	\$3,228.51
1840	70,820.79	38,359.78	\$3,166.82	112,347.33	62,071.72	50,275.67
1841	113,841.85	64,467.14	4,000.00	182,308.99	132,501.45	49,807.54
⁴ 1842	266,446.83	226,674.61	19,566.84	512,688.28	266,619.30	246,068.98
1843	275,139.64	275,696.19	23,046.68	573,882.51	303,973.06	269,909.45
1844	358,694.00	371,131.84	23,926.88	753,752.72	314,074.20	439,678.52
1845	366,753.02	420,717.30	26,009.83	813,480.15	370,621.25	442,858.90
⁵ 1846	389,861.42	459,365.18	29,191.29	878,417.89	412,679.80	465,738.09
1847	502,321.92	785,345.66	37,668.48	1,325,336.06	676,689.75	648,646.31

Year.	Number of through and way passengers.				
	Through passengers.	Way passengers.	First class.	Second class.	Grand total.
1842.....	18,570½	171,866	164,390	26,046	190,436½
1843.....	26,595	174,370½	160,412	40,553½	200,965½
1844.....	24,330½	195,927	157,885	62,372½	220,257½
1845.....	19,192½	204,440½	158,124½	65,508½	223,633
1846 (11 mos.)	29,832½	235,831½	186,229	79,435	265,664
1847.....	34,299½	354,011½	288,122½	100,188½	388,311
Total....	152,820½	1,336,447	1,115,163	374,104½	1,489,267½

NOTE.—The road paid dividends of 3 per cent in 1844, 5 per cent in 1845, 6 per cent in 1846, 8 per cent in 1847, 8 per cent in 1848, and 8 per cent in 1849, a total of 38 per cent in 6 years. The road had carried in the same period 1,704,250 passengers. One passenger had been killed. In addition, 27 employees and 5 "other persons" lost their lives. Increase of business for past year as compared with previous year has been 57 per cent on freight and 21 per cent on passengers, making an average gain of 42 per cent on gross receipts.

The persistence of the Worcester Road in refusing to join in the reduced through rates, in December 1843, after 8 months' trial, forced the Western to restore rates to \$5 for first class, with the second-class rate advanced in the same proportion, or two-thirds the first class. Either the higher rate or the winter season caused a sharp drop in the number of passengers carried, but the spring months showed a steady increase over the previous year. April 1844 showed receipts of \$6,501 from passengers as against \$5,101 for the same

¹Hunt's Merchants' Magazine, IX, 387-388, Oct. 1843; X, 99, Jan. 1844.

²The figures are given as printed in Hunt's Merchants' Magazine, XVIII, 437, April 1848, although apparently not quite accurate.

³Three months.

⁴First year of opening through to Albany.

⁵Eleven months.

month of the previous year, and the increase continued.¹ From this time on the rates remained fairly stable, tending downward until, in 1848, the fare from Boston to Albany had gone down to \$4.25.²

Several lateral roads were constructed from the Western Railroad, of which the earliest were two from Pittsfield, the Pittsfield and North Adams (now the Berkshire) and the Stockbridge and Pittsfield (now part of the New York, New Haven and Hartford). The first was chartered March 18, 1845, and opened for business in December, 1846. In January of the same year it had been leased to the Western Railroad for 30 years at a rental of 6 per cent on its cost, which was taken at \$450,000, with the right at the end of the period either to purchase the road outright at cost or to renew the lease for 99 years at a rental of 5 per cent. Two years after this road was chartered the Stockbridge and Pittsfield was incorporated, to run from Great Barrington to Pittsfield, 22 miles. Its construction was begun the following year (1848) and finished in 1850. It was taken over in the same year by the Housatonic Road at a rental of 7 per cent. The Troy and Greenfield, although chartered in 1848, did not begin construction until 1855, and its history therefore lies rather outside the period covered by this volume.

A similar system developed around Springfield by roads running north into Vermont and New Hampshire and south into Connecticut. The first of these roads was the Connecticut River Railroad, formed in 1845 by the consolidation of the Northampton and Springfield, chartered in 1842, and the Greenfield and Northampton, chartered in 1845. The road was opened from Springfield to Northampton, 17 miles, in December 1845, and the remainder of the line by several stages to South Vernon, Vermont, a total distance of 50 miles, in 1848. The company owned and operated one branch, to Chicopee Falls, opened in 1845; and it leased the Ashuelot Railroad, an extension of its own line from South Vernon to Keene, a distance of 23 miles, in 1849. The road was capitalized at \$1,750,000 and cost \$1,801,944. Its dividend payments varied greatly, beginning with 7 per cent in 1847, going to 8 per cent the following year, and dropping to 3 per cent in 1849. They averaged 3½ per cent. The roads to the south generally had their origin in Connecticut, and will be discussed under that section.

The fourth and northeasterly group originated in the Eastern Railroad, chartered April 13, 1836, on which construction work began in the following August. The first section, from East Boston to Salem, was opened in August 1838, and other sections in succession until the whole road was open to the New Hampshire line on November 9, 1840. There it joined the Eastern Railroad of New Hamp-

¹*Hunt's Merchants' Magazine*, X, 474, May 1844; *Niles' Register*, LXVI, 208, May 25, 1844; 320, July 13, 1844; LXVIII, 23, March 15, 1845.

²*Ibid.*, XVIII, 436, April 1848.

shire, which it had absorbed by lease in the preceding February. The opening of the first section was attended with much ceremony on August 27, 1838.¹

The Eastern Railroad of New Hampshire was chartered June 18, 1836, construction being commenced in 1839, and the road opened for public use in December 1840. The Massachusetts section of the road comprised also some 7 miles of branches. In 1846 the Eastern Railroad of Massachusetts, which controlled the whole road, leased, in conjunction with the Boston and Maine, the Portland, Saco and Portsmouth, at a rental of 6 per cent on the cost of the road. The road earned its rentals. The fares on the road averaged 3 cents per mile, but an experiment at reduction in 1848 seems to have resulted in increased revenue from passenger traffic. The fares decreased in proportion to the distance traveled, *e. g.*, from Boston to Chelsea, 4 miles, or to Lynn, 9 miles, the fare was 25 cents; to Seabrook, 40 miles, it was \$1.16, and to Portland, 105 miles, \$3. For the year in which these rates were in force (1847) the road carried over 780,000 passengers. Its income seems to have been chiefly from this source, for during the same time it carried but a little over 40,000 tons of merchandise. Its dividends ranged from 6½ per cent in 1843 to 8 per cent in 1848, showing a steady rise.²

A route which forms an important part of the Boston system and yet falls readily into none of these groupings was the Fitchburg. It came rather late, and shows, by the very fact of its organization at the time, how little Massachusetts railroads were affected by the financial depression which was then holding up construction on the Erie, the Baltimore and Ohio, and other great roads. Chartered on March 3, 1842, it commenced construction May 20, 1843, and opened the whole route to public use on March 5, 1845. The original road ran from the Charlestown Branch Railroad, in West Cambridge, to Fitchburg, a distance of 44 miles, but the company was given power to purchase or lease the latter, which it did shortly after the main road was opened. In 1848 the road obtained an entrance into the city of Boston. Its earnings were large, its dividends during its first 10 years of life ranging from 4 to 10 per cent. The company owned or leased a number of subsidiary lines to act as feeders, the chief of which were the Peterboro and Shirley from Groton Junction to the New Hampshire State line, and the Vermont and Massachusetts. The latter was a consolidation on November 22, 1844, of two earlier roads, the Vermont and Massachusetts, chartered March 15, 1844, to build a railroad to the State line of either Vermont or New Hampshire, and the Brattleboro and Fitchburg of Vermont, chartered in October 1843, to build a road from Brattleboro to the Massachusetts

¹*Niles' Register*, LV, 16, Sept. 1, 1838.

²*Hunt's Merchants' Magazine*, XVII, 628-629, Dec. 1847; XIX, 566-567, Nov. 1848; XXII, 464, April 1850; XXIII, 348, Sept. 1850.

line, to meet any road from Fitchburg. To these two in 1848 was joined the Greenfield and Fitchburg, a branch line to the former town. The road was never profitable and paid no dividends. It was opened over its whole length in February 1850.

The Fitchburg was distinctly a freight line, while most of the other roads received the larger part of their incomes from passenger traffic. It ran through the same territory as the Boston and Lowell and the Worcester, averaging about 10 miles from each. It was generally thought when the road was built that no railway could live in the section, but in 1849, when passenger fares were suddenly reduced to 2 cents per mile by the strong Boston and Lowell in the effort to put its weak rival out of business, the Fitchburg found its receipts doubled by the new rate, and successfully carried the fight on, while the older road gave in and raised its rates to the old level.¹ Rates on the Fitchburg seem to have averaged 2½ cents per mile as against 4 cents on its competitors.

MAINE.

Railroads in Maine grew up with Portland as a center. There was much rivalry with Boston for the western traffic, which finally developed into a "war of gages," in which Boston won and the Maine roads were compelled to conform. From its geographical position, Maine had in reality less to do with the neighboring States than with the British Provinces. Her railway system was therefore quite independent of other railways and had few natural relations with them.² There was great rivalry between Portland and Boston over the proposed Atlantic and St. Lawrence Railway, upon whose construction the State of Maine entered in 1844.³ The plan was first broached in 1835, when a resolution concerning a railroad from Quebec was introduced into the lower house.⁴ Surveys were made the same year and a conference of American and Canadian commissioners was held. In the next year the project was discussed in the governor's annual message.⁵ The citizens of Belfast asked for State aid in the construction of the Belfast and Quebec Railway, but nothing was done for several years save to make surveys.⁶

The first railroad constructed in Maine was the Bangor, Oldtown and Milford, chartered February 5, 1833, under the title of the Bangor and Piscataqua Railroad and Canal Company. It was opened in the latter part of 1836, with 11 miles of road in operation. The road did not prove productive, due in part to its location. The Portland, Saco and Portsmouth, a prolongation of the Eastern and the

¹*Hunt's Merchants' Magazine*, XXIII, 308, Sept. 1850.

²Poor, *History of Railroads and Canals in the United States*, I, 11.

³Poor, *The First International Railway*, 32, 50.

⁴Maine, *House Documents*, 24; *Resolves*, 1835, pp. 715-720; *Governor's Annual Message*, 1836, p. 1.

⁵Maine, *Public Documents*, 1836, *Senate Doc. No. 9*, *House Doc. No. 1*.

⁶Maine, *Public Documents*, 1837, *House Doc. No. 8*.

Boston and Maine Railroads of Massachusetts, was built next, with means furnished chiefly by the Massachusetts companies.¹

The Atlantic and St. Lawrence was the third road built in the State. It was also the first attempt at anything like a railroad system for the State as a whole, undertaken with the object of developing the resources of the State and of bringing to its chief commercial city the trade originating in the State and in the interior. Together with the St. Lawrence and Atlantic of Canada, begun at the same time, it was intended to form one line between the Atlantic Ocean and the St. Lawrence River. As a result of the enterprise the Androscoggin and Kennebec, the Kennebec and Portland, and the Buckfield Branch were immediately begun. The first was commenced in July 1847 and completed November 1849; the second, begun in 1847, was completed to Augusta in 1852. This road was too expensively built for its traffic. Several other short roads were built as a part of this system, of which one at least was shortly after abandoned. The Atlantic and St. Lawrence, which was chartered by Maine in 1845, by Vermont in 1847, and by New Hampshire in 1848, commenced construction in Maine, July 4, 1848, and 28 miles had been built by December. In 1851 there were 252 miles of railway in the State of Maine, built at a cost of \$7,129,692, of which sum \$1,250,000 was expended upon the Portland, Saco and Portsmouth. Some \$5,000,000 more is reported by Poor as unproductive investments, comprising the Buckfield Branch, the York and Cumberland, the Androscoggin, and the Penobscot and Kennebec.²

The Atlantic and St. Lawrence struggled along in its dreams of connection with Quebec until 1849, when the failure of its efforts to obtain funds to carry its line across New Hampshire and Vermont brought a serious threat of disaster. The money was obtained at last in London, and the road was built to Island Pond, Vermont, in 1853. In the same year it was leased to the Grand Trunk Railway, and in July 1853 trains ran from Portland to Montreal in 12 hours.

NEW HAMPSHIRE.

Railroads in New Hampshire, as in other New England States, were mainly developments of the Boston system, built with reference to that system. The first three roads—the Nashua and Lowell, the Eastern, and the Boston and Maine—have already been described as parts of the Massachusetts system. Within the State of New Hampshire the earliest road was the Concord, chartered at the same time as the Nashua and Lowell, and practically an extension of that road from Nashua to Concord, a distance of 35 miles. The road was not,

¹"Railroads in Maine," in Poor, *History of the Railroads and Canals of the United States*, I, 9; see also section on Massachusetts.

²Hunt's *Merchants' Magazine*, XXIII, 469-470, Oct. 1850; XXV, 242, Sept., 1851; Poor, *History of the Railroads and Canals of the United States*, I, 10.

however, put under construction until 1841, possibly because of the rather unfriendly attitude of New Hampshire toward railroads. The road was opened to the public over its whole length on September 7, 1842. Like the Nashua and Lowell, it was a very profitable road, earning 5 per cent its first year (1843), 9 per cent in 1844, and 13 per cent in 1845. Thereafter for some years it earned 10 per cent.

In 1843 the legislature voted that the railroad should pay to each owner of lands crossed whatever said owner chose to exact for the privilege. This act, of course, put an end to railroad building in the State.¹ It was repealed in 1844, and eight charters were granted at the same session. Among them were the Ashuelot, the Boston, Concord and Montreal, and the Northern, the only ones to be actually constructed within this period.

The first of these roads to be built was the Northern Railroad, which ran from Concord to West Lebanon, a distance of 69 miles. The road was chartered June 18, 1844, the company organized July 15, 1845, and 3 months later the road was placed under contract. In 1848 it took over and completed the Franklin and Bristol Railroad and operated it as a branch from that time on. The road was not a specially profitable investment, paying an average of only 2.2 per cent in dividends.

The Boston, Concord and Montreal commenced construction in 1846, but its progress was slow. It reached Wells River, 95 miles from Concord, in 1853. It paid no dividends and was shortly after forced into bankruptcy. The Ashuelot Road, which though chartered at the same time, did not begin construction until 1849, was opened in 1851, from Keene, New Hampshire, on the Cheshire Road, to South Vernon, Vermont, a distance of 24 miles. It was leased, in 1849, to the Connecticut River Road, at 7 per cent on its cost.

The Cheshire Road was practically a continuation of the Fitchburg, running from South Ashburnham, Massachusetts, to Bellows Falls, Vermont, 54 miles. It was a consolidation of the Cheshire of New Hampshire, chartered in 1844, with a capital of \$1,000,000, and the Winchendon of Massachusetts, chartered in 1845, with a capital of \$400,000. The consolidated company was organized in 1845, and the whole road opened to Bellows Falls in the latter part of 1848. The road was only fairly profitable. The Concord and Portsmouth, also chartered in 1845, to build a road 45 miles long from Concord to Portsmouth, was not commenced until the summer of 1847. It was finished somewhat over 5 years later, in 1852. The road was never profitable, and finally was sold under a forced sale in 1857.

In 1846 the lines of the Fitchburg and the Cheshire were extended by a charter for the Sullivan Road, 25 miles farther up the Connecticut Valley, to Windsor. Construction was commenced in 1849 and the road completed to Windsor in 1849. It was connected also with the Vermont Valley Road at Bellows Falls by a bridge and a short track

¹*Niles' Register*, LXIV, 276, July 1, 1843.

in 1851. It never paid and was sold for the benefit of the bondholders in the same year. The years from 1846 to 1850 show a considerable revival of railroad building in New Hampshire, for although many charters were obtained in the earlier years, construction came but slowly. The Great Falls and Conway, chartered in 1844, was not begun until 1848, and only about 20 miles, to the town of Milton, was finished within the period of this volume. The Peterboro and Shirley was a similarly abortive road, originally intended as an extension of the Fitchburg from West Groton Junction into New Hampshire, but completed only to Mason Village in 1850. It was operated from the beginning by the Fitchburg, and finally absorbed entirely by that road. It never paid expenses. The Cocheco Road was chartered in 1847, and built from Dover on the Boston and Maine to Alton Bay, a distance of 28 miles, reaching towards the Boston, Concord and Montreal at Lakeport, in the years 1849 to 1851. The last three roads show the efforts of the two great lines to throw out feeders into the undeveloped "up" country by means of subsidiary lines more or less nominally under independent management.¹

In 1848 four roads, afterwards at least partly built, were chartered, the Manchester and Lawrence, the Contoocook River, the Concord and Claremont, and the New Hampshire Central. The first mentioned, the Manchester and Lawrence, was an extension of the Boston system to a more direct connection with Concord and the Concord and Nashua Road. The road was opened for the transportation of passengers on November 13, 1849, and for freight 2 months later. It was leased to the Concord Road for most of the time, and was decidedly more profitable than most of the New Hampshire roads, although its dividends were not as certain as in the case of Massachusetts roads. It was finally practically absorbed by the Concord. The Contoocook Valley, now part of the Boston and Maine, ran south from Contoocook on the line of the Concord and Claremont to Hillsboro, afterwards part of the road to Winchendon. It was opened in 1849, and had a varied history of disaster, under several managements, never paying much over expenses. The Concord and Claremont and the New Hampshire Central were chartered in 1848 and were intended to connect Concord and Nashua respectively with the Connecticut River at Claremont. The first road was built as far as Bradford, 27 miles, in 1850, and in the same year the line from Manchester on the road from Nashua to Concord reached Henniker on the line of the Contoocook Valley, a distance of 26 miles. Neither road seems to have been able to proceed farther, so in 1853 they were consolidated under the title of the Merrimac and Connecticut Rivers Railroad. This road paid no dividends, however, and was later operated by the Northern Railroad under contract with the trustees of the bondholders.

¹Poor, *History of the Railroads and Canals in the United States*, I, 50.

VERMONT.

Railroads in Vermont bear witness in their development to the isolation of the State, and also to the absence of any dominating urban community within the State. All were outlying parts of the systems belonging primarily to Albany and Boston. There was in the State no city whose situation enabled it to provide a local center for the integration of the intrastate roads. The country was sparsely settled and only scantily productive, and at the same time its mountainous character rendered railroad building especially difficult. Under these conditions the only productive road was the Rutland and Whitehall, a feeder to the Albany lines. Cost of operation on all of the roads was extremely heavy, averaging 74 per cent of the receipts. This was due to the position of the roads in relation to connecting lines, in the period when roads rarely crossed State lines and were generally operated as small independent units. The more important of the Vermont roads connected with the chief lines from other States, and were under the necessity of maintaining a faster and more frequent service than the conditions of local traffic warranted. Although they ranked among the leading routes, their incomes were insufficient to meet the expenditures which their reputation required.¹

Railroads began to be a live issue in Vermont in 1843. In October 1843, the following-named through roads were chartered: the Vermont Central, the Rutland and Burlington (these being the first roads to connect the Lake Champlain region and the Connecticut Valley with the proposed Northern Railroad of New Hampshire, an extension of the Boston lines), and the Brattleboro and Fitchburg (later part of the Vermont and Massachusetts, extending the Boston and Fitchburg to Brattleboro). On December 5 of the same year a convention was held for the purpose of promoting the Brattleboro Road, and the extension of the line to Burlington and Montreal. The ambitious citizens of Brattleboro saw themselves on the line of a great through route from Boston to the northern country.²

The above-mentioned roads were not the first railroads chartered in Vermont. In fact, eight roads had been chartered prior to 1840. The first two, both chartered November 9, 1831, were the Bennington and Brattleboro and the Rutland and Whitehall. The first road, intended to connect the two thriving towns of southern Vermont, though the charter was renewed and extended in 1835 and again in 1845, 1849, and 1852, was finally abandoned. The Rutland and Whitehall, an extension of the Saratoga and Whitehall, after many renewals and extensions, was finally built in 1850. The six other early charters were for the Vermont, 1832; the Rutland and Connecticut River, 1835; the Connecticut and Passumpsic Rivers, 1835; the

¹Poor, *History of the Railroads and Canals in the United States*, I, 71.

²*Niles' Register*, LXV, 215, Dec. 2, 1843.

Vergennes and Bristol, 1835; the Norwich and Hartford Forwarding Company, 1836; and the Lake Champlain and Otter Creek, 1838. Of these enterprises all but the Connecticut and Passumpsic Rivers lapsed into oblivion. They were in general projections of local roads, for purely local ends, and were largely promoted by persons ignorant of railroad construction and operation.

In this connection the railroad ambitions and aspirations of Brattleboro, a flourishing village on the Connecticut River, are of interest. The town seems to have possessed a very energetic spirit, and evidently wished to become the commercial center of the upper Connecticut Valley. The coming of the railroad, however, left Brattleboro high and dry on the channel of traffic, since it was too near larger and more advantageously situated cities, and had, moreover, too little business available in the country immediately surrounding it. The jobbing centers pushed back to Rutland and Burlington.

The Vermont Central, the first railroad constructed in the State, was chartered October 31, 1843. It was opened over its whole route, from Windsor to Burlington, December 31, 1849, and thus completed a through route from Boston to Lake Champlain, a fact made much of at the time.¹ Poor calls it one of the most disastrous enterprises ever undertaken in the country. It seems to have been the victim of gross mismanagement, and, although a fairly profitable road, to have been run rather in the interests of other roads than of its own stockholders. It earned \$400 per mile annually, but paid neither interest on its bonds nor dividends. In August 1849, the Central took a lease of the Vermont and Canada, then in process of construction, at an annual rental. The latter road had been chartered the year previously, to extend the line of the Vermont Central to the Canada line, there to meet the road to Montreal. It ran from Essex Junction, a few miles from Burlington, to Rouse's Point, on the Canada line. The Vermont Central raised the money for its construction and completed the line. The rent was paid at the rate of 8 per cent on its cost, at a capitalization of \$1,348,500, and the agreement reserved the right to purchase the road after 20 years, at cost. As security for the rent, a mortgage was created on the Central. The venture proved exceedingly unsuccessful, and in 1852 the lease was surrendered to trustees, who thereafter operated the road. The rent was defaulted in 1854, and the company in the same year ceased interest payments. The trustees under the mortgage operated the Central for the benefit of the Vermont and Canada, and thus began a long legal controversy over the rights of the two roads.

The Connecticut and Passumpsic Rivers Railroad was chartered November 10, 1835, with an authorized capital of \$3,000,000, to run

¹*Hunt's Merchants' Magazine*, XXI, 244, Aug. 1849.

from White River Junction, the terminus of the Northern Railroad of New Hampshire, to the Canada line, near North Troy, where it was to meet a road from the Canadian side. The road followed the Connecticut Valley from White River Junction to Wells River and East Barnet. At the latter place it followed the valley of the Passumpsic through St. Johnsbury and thence to Boston. The charter lay unused until 1843, when it was revived, but the company was not organized under it until 1846. Progress on the road was exceedingly slow. It was opened to St. Johnsbury in 1850. It was somewhat more profitable to its stockholders than many Vermont roads, in that it actually paid small dividends for a few years. In 1849 it declared a dividend of 3 per cent in cash and 9 per cent in stock at par, and for 3 years thereafter it paid dividends at 2 per cent. Later its earnings seem to have been used in the construction of extensions.

In 1843, the year following that in which the Fitchburg was chartered in Massachusetts, the Rutland and Burlington was chartered in Vermont, and a year later the Cheshire was chartered in New Hampshire. These roads were to form the connecting links in another line by which the Boston roads were reaching out over all New England. The Rutland and Burlington was originally chartered under the name of the Champlain and Connecticut River, the name being changed to Rutland and Burlington on November 6, 1847. The capital was to be \$1,000,000, but could be increased if necessary to an amount sufficient to build the road. Construction was commenced in 1847 and the road opened to Burlington in 1849. The Cheshire had been opened a year earlier, and with the completion of the Rutland to Burlington, the Fitchburg opened up another through route from Boston to Canada. The share capital of the Rutland at its completion amounted to \$2,233,376. It never paid dividends, and in 1853 was forced into the hands of a receiver.

The Western Vermont belongs to the Albany system. It was chartered in 1845, to run from Rutland to the State line of New York near North Bennington, a distance of 54 miles. It was not commenced until 1850, and was opened 2 years later. The road did not pay much beyond expenses. It was forced into the hands of trustees in 1854, and leased by the Troy and Boston shortly afterwards. Two other roads from Rutland also belonged to the Albany rather than the Boston lines. These were the Rutland and Washington, the Vermont section of the Troy and Rutland, and the Rutland and Whitehall, part of the Saratoga and Whitehall. Neither road had any existence outside the principal company which operated it.

The last road of this decade was the Vermont Valley, chartered in 1848 and extending along the Connecticut River from Brattleboro to Bellows Falls. It was opened in 1851 and paid no dividends on its capital.

CONNECTICUT.

In a majority of cases Connecticut lines also were offshoots of Massachusetts lines. The first Connecticut road, however, was a line from New Haven to Hartford, and thence to a connection with the Western at Springfield. This company was chartered in 1833, to construct a road from New Haven to Hartford, a distance of $36\frac{1}{2}$ miles, but was not opened until 1839. In the same year the Massachusetts section, to Springfield, was authorized, and in 1842, under the auspices of the Connecticut company, the work of building was begun, and was finished the following year. In 1850 the branch from Hartford to Middletown was opened. After the first two years the road was very productive, its annual dividends rising steadily from 3 to 10 per cent. The second road connected Norwich, at the head of navigation on the Thames, with Worcester, and was the cause of much perturbation on the part of Boston merchants lest it should draw away trade from the Massachusetts port. The road was 57 miles long. It was chartered in 1832 and 1833 by Massachusetts and Connecticut respectively, and the two sections united in 1836 and began work the succeeding year. The road was opened in 1840. It was not very profitable, paying only small and irregular dividends.

The Housatonic Road seems to have been peculiarly unfortunate, paying no dividends and heavily involving itself in enterprises to increase its business. Chartered in 1836, it was put under construction a year later, and opened in 1842. It was 74 miles long, extending from Bridgeport on Long Island Sound to the Massachusetts State line. From there it was continued by the Berkshire Road of Massachusetts and the West Stockbridge Road to a connection with the Hudson and Berkshire at the New York State line. The Berkshire Road was leased to the Housatonic in 1843 at an annual rental of 7 per cent on the cost. In 1844 the West Stockbridge Road also was leased by the Housatonic, and in 1849 the Stockbridge and Pittsfield. The rents paid on these leased roads seem to have wiped out all the profits on the original road.

No other roads were chartered until 1844, when the New York and New Haven Road, the last link in the first all-rail route from Boston to New York, received its charter. The first section was opened in 1849. In the same year it made an arrangement with the New Haven and Hartford Road, by which the latter discontinued its day line of steamers to New York and agreed not to make its rates too ruinously low for the road to compete. In return for the withdrawal of the boats, the New Haven and New York agreed to pay the Hartford Company \$20,000 annually, one-half to the railroad, one-half to the subsidiary company, the Connecticut River Steamboat Company. In 1848 the New York and New Haven took over under a lease the New Haven and Northampton, then under construction. In 1849, when the

agreement with the Hartford Road was made, the New York and New Haven agreed not to push the building of the road to Northampton, but later it permitted the sections beyond Plainville to be built by other companies and operated these lines as part of its own system, by long lease or virtual purchase. The New York and New Haven guaranteed the bonds of the New Haven and Northampton, and its continuation in Massachusetts, the Hampshire and Hampden. A line called the New York and Boston was chartered in 1846, but never amounted to much more than the charter.

The early lines in Connecticut all ran from the cities on the sound into the northern part of the State to connect with the Massachusetts roads at Worcester, Springfield, or Pittsfield. New London built its road to parallel the Thames to Norwich, and thence up the Willimantic River to Willimantic and Palmer, where it joined the Western Railroad. It was chartered in 1847, and opened three years later, in 1850. The road was aided by the city of New London, which guaranteed its bonds, but the road failed to pay either interest or dividends.

The last road of this decade was the Danbury and Norwalk, chartered in 1849 and opened three years later. Its share capital was authorized at \$400,000, but only \$279,100 was paid in. The road ran from Danbury to Norwalk, a distance of 24 miles, and seems to have paid dividends averaging a trifle over 4 per cent.

The only canal in Connecticut that appears to have made trouble was the New Haven and Northampton, 78 miles in length, and built in order to compete with the traffic on the Connecticut River, by diverting the valley trade at a point above Springfield.¹ The trade on it was never enough to pay expenses, and it was kept going for a considerable time by subsidies of the city of New Haven, which city in 1840 voted the canal an annual appropriation of \$3,000 for a period not to exceed 30 years. The competition between the canal and railroad promoters was not settled until the New Haven and Hartford began extending its system in the direction of the Northampton and made a traffic agreement with the Connecticut River Steamboat Company. The canal was ultimately replaced by the New Haven and Northampton Railroad.

Bridgeport was another city that gave aid to transportation systems. It lent \$300,000 to the Housatonic Road, with the expectation of substantial returns in business. These were not realized, however, by either city or railroad, and in 1843 the road assigned all its interests to the city. The latter was unable to pay the interest on the sum it had borrowed to aid the Housatonic, and there was an expectation that the road would go to pieces.² It continued, however, and now forms part of the New York, New Haven and Hartford system.

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 316.

²*Niles' Register*, LXII, 304, July 9, 1842; LXV, 228, Dec. 9, 1843.

SUMMARY.

At the beginning of the sixth decade of the nineteenth century there were in New England approximately 2,832 miles of railroad in actual operation. As has been shown, with few exceptions, these roads all radiated from Boston. Only a few of the north-and-south roads of Connecticut and Western Massachusetts fail to come under the category of Boston roads. In the twenty and more years since railroads had been developing in the State, much railroad history had been made. Roads in various sections, as in Maine, had been pushed into new territory not yet containing a population sufficient to support a road. Meanwhile, the ideal of a railroad had changed. A series of short connecting roads no longer satisfied this ideal, which began to require continuous roads along important natural avenues of trade. After a brief period of division of territory between water and rail routes by mutual exclusion, the railroads pushed up the river valleys and across them, as was the case in New Hampshire and especially in Connecticut. The accidental determination of main-line routes developed cities out of small towns and abandoned other towns to insignificance. A slight change of the Western from Amherst to Northampton, for example, made one a railroad center on a small scale and left the other commercially remote from the main lines of traffic. Brattleboro's aspirations to importance as a center were made futile by the necessity of pushing farther up the Connecticut Valley and across to that of Lake Champlain, with the two great cities as goals.

Already there were the beginnings of railroad systems. Massachusetts roads do not seem to have been deluded into the use of different gages, and the uniform gage enabled trains to pass readily from one line to another, although river-courses in some cases, as at Springfield, and at other points on the Connecticut, prevented such continuous passage until bridges were built. The Boston and Worcester, it is true, held its independent existence in the chain between Boston and Albany, but beyond Worcester the Western was developing a series of subsidiary roads. To the north the Boston and Maine and the Eastern were developing their lines and necessarily, also, the territory through which these lines ran. A minor center, practically subsidiary to Boston, was arising in Concord, the terminus of roads extending north and northwest. To the south another center was found in Providence. Springfield and Pittsfield, as well as New Haven and Worcester, were foci on a small scale.

In the decade 1841-1851, as has been seen in detail above, the mileage of New England roads increased manifold. At the beginning of the decade Vermont had no railroad within its borders; Maine only one, 13 miles long; New Hampshire had 23 miles of road, Rhode Island 50, and Connecticut 170. Massachusetts, however, had 384 miles of road in operation and many more building. These

roads represented an investment of nearly \$15,250,000 and paid an average of $7\frac{1}{3}$ per cent on their capital. The total receipts for the roads in the year 1840 were \$1,346,454. Most of this was from passenger traffic. Even the Boston and Lowell, noted for its large freight business, received \$127,000 from passengers as compared to \$104,567 from freight. Only one road, the Lowell and Nashua, showed an actual excess of freight over passenger receipts, \$35,794 from passengers to \$46,849 from freight. The Boston and Lowell, Boston and Worcester, and Boston and Providence kept their dividends at level rates of 8, 6, and 7 per cent, respectively, and other important roads followed a similar policy. In January 1842, one of the leading engineers of the time observed that the expenses of these roads averaged 47 per cent of the receipts, and that the ratio of freight and passenger receipts to expenses was slowly rising on all roads.¹ Throughout the years of depression in the early forties the Massachusetts roads maintained steady rates of dividends. It was frequently said of the Massachusetts roads that they were better built and more economically managed than other roads. Moreover, as compared with roads in other States, they served a territory more densely populated and less remote from a market and port.

In 1843 the prices of the leading railroad stocks seem to indicate that they were considered excellent investments. The Lowell Road averaged 131, the Worcester, $110\frac{3}{4}$, the Providence, $102\frac{3}{4}$. Two roads were selling just under par, namely, the Eastern and the Boston and Maine, which were barely in running order and selling at 98. The Western alone was low; it had gone to 90, but averaged only 58.² In the year following (1844) these quotations are given for current prices: Lowell, 130; Worcester, 117; Eastern, 108; Providence, 108; Boston and Maine, 107; Lowell and Nashua, 130; New Bedford, 107; Taunton, 120.³ This is the period in which the Erie, the Baltimore and Ohio, and other great roads were either in the hands of receivers or struggling for a scanty existence.

In 1846 there were 710 miles of railroad belonging to the Boston system.⁴ Tables 43 and 44 show statistics of railroads having terminals in Boston, and are reproduced from *Hunt's Merchants' Magazine* for July 1846, in which the following explanatory note appears:

"These statements compiled from railroad reports, are designed to present a general statistical view of these roads for 1845. Beginning with the Eastern, they are numbered 1 to 7; those having no numbers are branches or a continuation of the one numbered immediately preceding."

Table 44 exhibits a view of the business done on these roads for 1845, the number of miles run by the different trains on the roads,

¹*Hunt's Merchants' Magazine*, VI, 94, Jan. 1842.

²*Niles' Register*, LXIV, 320, July 15, 1843.

³*Ibid.*, LXV, 304, Jan. 6, 1844.

⁴This is not a grouping by the author. The New England roads were so regarded and grouped by their contemporaries. Cf. *Hunt's Merchants' Magazine*, XV, 44-45, July 1846.

the gross income and expenditures, and the rate of dividends paid.¹ The roads marked (a) were not completed so as to be open during the whole year; those marked (b) were under construction and only a small part was open. This is independent of those roads outside of the State with which these roads connect.

TABLE 43.—*Mileage, capital, and cost of railroads with terminals in Boston, 1845.*

Name.	Length.	Capital.	Cost.
	<i>miles.</i>		
1. Eastern.....	71	\$2,765,000	\$2,471,561.01
2. Maine.....	71	1,800,000	1,887,328.76
3. Lowell.....	26	1,800,000	1,932,597.64
Nashua.....	14	380,000	380,000.00
4. Fitchburg.....	50	1,322,500	1,477,477.03
Charlestown.....	6	300,000	327,388.83
5. Worcester.....	51	2,900,000	3,000,000.00
Norwich.....	66	2,150,000	2,170,491.77
Western.....	156	3,400,000	7,999,555.56
Connecticut River.....	36	1,000,000	511,472.99
Hartford.....	25	300,000	300,000.00
Berkshire.....	21	250,000	250,000.00
West Stockbridge.....	..	39,600	39,600.00
6. Providence.....	41	1,960,000	1,964,677.16
Stoughton.....	7	85,600	88,814.14
Taunton.....	11	250,000	250,000.00
New Bedford.....	21	400,000	453,623.29
7. Old Colony.....	37	800,000	889,730.00
Middleboro.....	..	300,000	317,805.39
Total.....	710	22,202,700	26,712,123.57

The question of fares and rates received constant attention. Excursions lowered the average of rates, and other schemes of lowering rates were discussed. As has been noted, the Western Road, under pressure from its stockholders, who demanded that a dividend should be paid, had increased its fares and freight rates in 1843. For a time this appeared successful, and in 1845 the company paid its first dividend of 3 per cent. There had been an apparent gain of 31 per cent in total revenue, but an analysis showed that the rate of increase in freight business had dropped from 51 per cent to 34½ per cent. An analysis of the part due to passenger traffic showed a still more serious condition. The income from fares had, it is true, increased 30¾ per cent, but, although the year was one of great prosperity on other roads, the actual number of passengers carried had diminished. The entire gain came from extraneous causes, the chief of which was the award in the dispute between the Western and the Boston and Worcester over the proportion to be received by each on a through ticket. In 1843, when the fare was \$4 from Boston to Albany, the Western received 69 per cent, or \$2.75. In 1844, on a

¹*Hunt's Merchants' Magazine*, XV, 45, July 1846.

fare of \$6, it received 81 per cent, or \$4.88. This same award accounted for over 10 per cent of the increase in freight receipts also.

The agitation for low fares and rates was kept up, and in the early part of 1846 an experiment was made by the Western, jointly with the Boston and Worcester, of a low-fare night train for through passengers only. This train left each city at 7 p. m. and the fare was \$3. Although there was a very decided increase in the number of through passengers, it was not enough to make the train profitable and it was

TABLE 44.—*Train mileage, gross income and expenditures, and dividend rates of railroads with terminals in Boston, 1845.*¹

Name.	Miles traveled.	Income.	Expenditures.	Dividend.
				<i>p. ct.</i>
1. Eastern.....	218,583	\$350,149.55	\$116,840.00	8
2. Maine.....	194,946	287,063.10	154,099.95	7
3. Lowell.....	175,537	356,067.67	179,042.13	8
Nashua.....	43,065	112,680.89	48,009.94	15
4. Fitchburg (a).....	167,816	203,996.36	78,333.76	8
Charlestown.....	14,800	26,814.04	16,276.77	....
5. Worcester.....	253,706	487,455.53	249,729.50	8
Norwich.....	173,230	204,308.45	134,229.03	3
Western.....	530,201	813,480.15	370,621.25	....
Connecticut River (b).....	15,268	13,521.06	8,001.26	....
Hartford.....	14,559	.....	.....	....
Berkshire.....	29,359	.....	.....	....
West Stockbridge.....	4,410	2,311.20	447.52	4
6. Providence.....	175,203	350,628.97	197,827.11	7
Stoughton.....	4,232	7,810.00	2,904.76	4
Taunton.....	27,988	116,536.99	100,889.95	8
New Bedford.....	48,040	78,211.12	29,353.76	7
7. Old Colony (a).....	2,550	.....	.....	....
Middleboro (b).....	17,800	15,796.72	8,205.83	....
Total.....	2,111,293	3,426,831.80	1,694,812.52	....

abandoned after a few weeks' trial. Three-fourths of the road's patronage had previously been in way travel. Heavier trains, as well as lower rates, were being vigorously urged, as experience showed that the cost of transportation per unit of traffic was constantly falling with increase in business and improvement in methods and facilities.²

In addition to the excursion rates, which seem to have included all the New England towns,³ there was developing a commutation business to the towns within short distances of Boston. These season tickets, as they were called, entitled the owners to two passages daily and were not transferable. The Boston and Worcester sold such tickets at the rate of \$50 for a ticket good for one year, from Boston to Needham, 13 miles. A 6 months' ticket cost \$30, and a 3 months' \$22. On the Boston and Maine, a ticket to Haverhill,

¹The figures are printed as given in *Hunt's Merchant's Magazine*, although the footing appears to be erroneous.

²*Hunt's Merchants' Magazine*, XV, 234-250, Sept. 1846.

³*Ibid.*, 236.

32 miles, cost \$100 for a year and \$50 for six months. A single fare for the same distance cost 85 cents. The Boston and Lowell sold tickets between these two points at \$65 for 6 months, and proportionately for intermediate distances. Single fare, 26 miles, was 65 cents. The Eastern Road sold tickets on a similar basis, and in addition sold single tickets at certain discounts, according to the quantity purchased at one time; 100 to 200 tickets were sold at a discount of 12½ per cent, 200 to 300 at 25 per cent, 300 to 400 at 33½ per cent, 400 to 500 at 40 per cent, and 500 to 600 at 45 per cent.¹

In 1848 the State gave further aid to the Western Road by the purchase of 441 shares at par, paying for them in part out of funds in the State treasury and partly by a loan. In addition to this, the State contracted for 1,323 shares, and the company was given in payment a note of the State treasurer for which the legislature was asked to provide payment. This sent the stock up to \$105, and the company declared a dividend of 8 per cent.²

The amount of capital invested in railroads in New England was estimated at this time as \$70,000,000. A number of the leading roads obtained increases of capital from the legislature, ranging from \$100,000 on the Old Colony to \$3,000,000 on the Western.³ The mileage of roads was increasing by leaps and bounds. In 1849 no less than 515 miles of railroad were opened in the six New England States, of which 300 miles were new roads.⁴ In addition, 14 new roads were incorporated, having an aggregate capital of \$2,370,000.⁵ In 1850, Boston was declared to be the center of 3,000 miles of railway, and to have its chief interest in the railway business. Most of the roads leading directly into Boston were paying steady dividends. The seven leading roads, the Boston and Providence, the Worcester, the Boston and Maine, the Boston and Lowell, the Fitchburg, the Western, and the Eastern, paid from 5.8 per cent to 9.5 per cent.⁶ The Eastern showed the highest rate. By 1851 the number of roads in operation was over 40,⁷ as against 28 five years earlier,⁸ and the growth kept steadily on. In 1853 \$7,000,000 more was poured by Massachusetts investors into their own railroads. As a contemporary writer observes, they had tapped a stream of natural wealth, which flowed into their city over the new channels provided.⁹

¹*Hunt's Merchants' Magazine*, XV, 324.

²*Niles' Register*, LXXIII, 333, Jan. 22, 1848.

³*Hunt's Merchants' Magazine*, XVIII, 438, April 1848.

⁴*Ibid.*, XX, 222, Feb. 1849; *Niles' Register*, LXXV, 76, Jan. 31, 1849; LXXV, 236, April 4, 1849; LXXV, 282, May 2, 1849.

⁵*Hunt's Merchants' Magazine*, XX, 531, May 1849.

⁶*Ibid.*, XXIII, 348, Sept. 1850; 487, Oct. 1850.

⁷*Ibid.*, XXIV, 638, May 1851.

⁸*DeBow's Commercial Review*, IV, 464, Dec. 1847.

⁹*Hunt's Merchants' Magazine*, XXIX, 759, Dec. 1853.

Tables 45 to 47 give the statistics of capitalization and cost of roads, together with dividend rates and price of shares. Dividends and interest to the amount of \$1,600,000 were paid in Boston during the month of July 1851, the most prominent being shown in table 45.

TABLE 45.—*Railroad dividends paid in Boston during July 1851.*¹

Railway.	Capital.	Dividend.	Amount of dividend.
		<i>per cent.</i>	
Western Railroad.....	\$51,50,000	4	\$206,000
Boston and Worcester.....	4,500,000	3.50	157,500
Boston and Maine.....	4,155,700	3.50	145,449
Fitchburg.....	3,320,000	4	132,800
Taunton Branch.....	250,000	4	10,000
Boston and Providence.....	3,160,000	3	94,800
Boston and Lowell.....	1,830,000	4	73,200
Connecticut and Passumpsic....	1,090,000	3	32,700
Fall River.....	1,000,000	3	30,000
Pittsfield and North Adams.....	450,000	3	13,500
Worcester and Nashua.....	1,267,800	2	25,350
South Reading Branch.....	200,000	5	10,000
Old Colony.....	1,854,200	2	37,084
Mass. 5 p. ct. issued on Western..	.....	..	24,875

Table 46 shows the annual investment of Massachusetts railroads as given by their respective returns to the State legislature on January 1 of each year.

TABLE 46.—*Cost of five Massachusetts railroads, 1838 to 1851.*²

Year.	Boston and Worcester.	Boston and Providence.	Boston and Lowell.	Western.	Eastern.
1838	\$1,000,000	\$1,682,900	\$1,575,663	.....	.....
1839	1,700,000	1,782,000	1,575,663	.....	.....
1840	1,799,255	1,782,000	1,608,460	.....	.....
1841	1,934,981	1,782,000	1,729,242	.....	.....
1842	2,373,547	1,782,000	1,834,893	\$5,255,026	\$2,267,000
1843	2,726,102	1,892,831	1,978,286	5,692,007	2,267,000
1844	2,900,000	1,894,831	1,863,529	5,757,529	2,388,631
1845	2,914,078	1,886,134	1,902,555	5,919,260	2,388,044
1846	2,900,000	1,964,677	1,932,598	6,120,307	2,471,561
1847	3,485,000	2,109,455	1,940,418	6,409,590	2,494,268
1848	4,113,609	2,544,475	1,956,719	6,987,240	2,937,206
1849	4,650,392	3,031,106	2,013,687	7,975,452	3,095,393
1850	4,882,648	3,416,232	1,945,646	8,032,813	3,120,391
1851	4,908,332	3,370,269	1,945,666	7,996,056	3,119,265

Table 48, prepared by J. G. Martin, of Boston, shows transactions during 1853 in stocks of principal roads controlled in Boston.³

¹*Hunt's Merchants' Magazine*, XXV, 245, Aug. 1851.

²*Ibid.*, XXVI, 759, June 1852.

³*Ibid.*, XXXI, 377-378, Sept., 1854.

TABLE 47.—Dividends paid or payable on railroad stocks in Boston, in July 1853.¹

Railway.	Capital.	Rate of dividend.	Amount of dividend.
Berkshire.....	3,205 shares	1 $\frac{3}{4}$ p. ct.	\$5,600
Boston and Lowell.....	\$1,830,000	3 p. ct.	54,900
Boston and Maine.....	\$4,155,700	4 p. ct.	168,228
Boston and Providence.....	\$3,160,000	3 p. ct.	94,800
Boston and Worcester.....	\$4,500,000	3 $\frac{1}{2}$ p. ct.	157,500
Cape Cod Branch.....	5,000 shares	\$2	10,000
Cheshire (preferred).....	21,482 shares	\$2	42,964
Eastern.....	\$2,850,000	3 p. ct.	85,500
Eastern, N. H.....	\$492,500	3 p. ct.	14,775
Fall River.....	\$1,050,000	4 p. ct.	42,000
Fitchburg.....	\$3,540,000	3 p. ct.	106,200
Lexington and West Cambridge (preferred)...	\$120,000	3 p. ct.	3,600
Manchester and Lawrence.....	\$800,000	3 $\frac{1}{2}$ p. ct.	28,000
Pittsfield and North Adams.....	\$450,000	3 p. ct.	13,500
Rutland (6% preferred).....	\$575,000	3 p. ct.	17,250
Stoughton Branch.....	\$85,400	3 $\frac{1}{2}$ p. ct.	2,989
Taunton Branch.....	\$250,000	4 p. ct.	10,000
Western.....	\$5,150,000	3 $\frac{1}{2}$ p. ct.	180,250
Worcester and Nashua.....	\$1,800,000	2 $\frac{1}{4}$ p. ct.	40,500
Total.....			1,076,564

TABLE 48.—Value of railroad shares and bonds, 1853-1854.

RAILROAD SHARES.

Railway.	1853.					Jan. 2, 1854.	Dividends, 1853.	
	Par.	Highest sales.	Lowest sales.	Shares sold.	Jan. 1.			
Boston and Lowell.....	100	196	91.75	205	106	94	3	3
Boston and Maine.....	100	109.25	102	5,296	106	102	4	4
Boston and Worcester.....	100	105	100.25	4,021	103	101	3.5	3.5
Boston and Providence.....	100	92.5	85	2,810	90	85	3	3.5
Cheshire (preferred).....	100	58.25	40	984	56	40	2	2
Concord.....	50	57	51.75	1,776	55	52.125	4	4
Concord and Montreal.....	100	45.25	30	1,494	44	33	0	0
Connecticut River.....	100	62.5	52.5	177	60.5	54	2	2
Eastern.....	100	98.25	90	1,850	95.75	88.25	3	3
Fall River.....	100	107.75	104	263	104	102	4	4
Fitchburg.....	100	104.125	93	3,337	102	94	3	3
Grand Junction.....	100	65	30	310	30	55	0	0
Manchester and Lawrence...	100	101.5	88	1,168	101	88.5	3.5	3.5
Michigan Central.....	100	118	104	2,767	103.5	101	0	8
Nashua and Lowell.....	100	112	107	50	108	106	4	4
New York Central.....	100	115.75	113.5	51	.....	113.5	0	0
Norfolk County.....	100	69	50	1,441	56	63	0	0
Northern (N. H.).....	100	65	44.75	4,846	59.75	52	2.5	2.5
Norwich and Worcester.....	100	58.625	51.25	725	53	60	2	2
Ogdensburg.....	50	31.5	12.625	133,868	31	16.5	0	0
Old Colony.....	100	95	77	3,809	90	91	0	0
Passumpsic.....	100	51	33.375	1,370	50.5	33	0	0
Portland and Saco.....	100	102.25	96	602	99.5	97	3	3
Reading.....	50	43.5	43	165	49	39.5	3	3
Rutland (old).....	100	42	10	2,643	38	11.5	0	0
Rutland preferred 8s.....	100	94.5	40	422	90	40	4	4
Rutland preferred 6s.....	100	70	15	169	64.5	23	3	0
South Shore.....	25	10.25	8.25	1,914	9	8.5	0	0
Sullivan.....	100	21	10	678	11	15	0	0
Vermont Central.....	50	21.5	12.125	510,833	18.75	13.625	0	0
Vermont and Canada.....	100	107.75	99	1,969	105	99	4	4
Vermont and Massachusetts..	100	22	16.75	21,241	21.125	18.75	0	0
Wilmington.....	50	40.5	35.5	25,370	37.5	39.5	2	3
Western.....	100	102.5	97	4,470	101.5	96	3.5	3.5
Worcester and Nashua.....	100	63	54	1,551	59	58.5	2.25	2.75

¹Hunt's Merchants' Magazine, XXIX, 247, Aug. 1853.

TABLE 48.—*Value of railroad shares and bonds, 1853-1854—Continued.*

RAILROAD BONDS.

Kind of bond.	1853.				1854.	
	Highest sales.	Lowest sales.	Amount sold.	Jan. 1.	Jan. 2.	Interest, when payable.
Cheshire 6s, 1860.....	99.25	95	\$3,100	99.25	96	Jan., July
Concord and Montreal mortgage 7s, 1860.....	100.25	99	53,000	99.5	100	Feb. 15. Aug. 15
Grand Junction 6s, 1870.....	85	73	67,200	77	79	Jan., July
Michigan Central 8s, 1860.....	111.25	106	21,000	10.5	108	Apr., Oct.
Norfolk County 6s, 1854.....	85	70	43,700	72	80	Jan., July
Ogdensburg first mortgage 7s, 1859...	102.25	89	171,900	102	91	Apr., Oct.
Ogdensburg second mortgage 7s, 1861.	92.5	62	963,000	89.75	66.5	Apr., Oct.
Rutland first mortgage 7s, 1863.....	100	87	205,400	99.25	90.5	Feb., Aug.
Rutland second mortgage 7s, 1863....	74	67	46,000	.....	67.5	Feb., Aug.
Vermont Central first mortgage 7s, 1861.....	96	83.25	1,092,700	91	87	May, Nov.
Vermont Central second mortgage 7s, 1867.....	85.75	64.25	1,067,400	80	67.25	Jan., July
Vermont and Massachusetts mortgage 6s, 1855.....	87	80	84,200	84	82	Jan., July

Table 49 exhibits the percentage of dividends paid by 17 railroads of Massachusetts during the years 1851 to 1855, and total cost of said roads at the beginning of each year.¹

TABLE 49.—*Rates of dividends paid by 17 Massachusetts railroads and total cost of roads, 1851 to 1855.²*

Railroad.	1851	1852	1853	1854	1855	Average last 5 years.	Total cost of 17 roads.	
							Year.	Cost.
	<i>p. ct.</i>	<i>p. ct.</i>	<i>p. ct.</i>	<i>p. ct.</i>	<i>p. ct.</i>	<i>p. ct.</i>		
Boston and Providence.....	6	6	5.5	6.5	.....	4.8	1851	\$44,313,300
Boston and Worcester.....	7	7	7	7	6	6.8	1852	43,731,400
Boston and Lowell.....	8	7.5	6	6	3	6.1	1853	43,757,700
Taunton Branch.....	8	8	8	8	8	8	1854	44,735,600
Nashua and Lowell.....	9	8	8	8	6	7.8	1855	46,761,400
Norwich and Worcester.....	4	4.5	4	6	2.5	4.2	.....	.....
New Bedford and Taunton...	8	8	7	7	6	7.2	.....	.....
Western.....	8	7.5	6.5	7	7	7.2	.....	.....
Eastern.....	8	7.5	6	7	.....	5.7	.....	.....
Boston and Maine.....	5.5	7	7.5	8	7	7	.....	.....
Fitchburg.....	8	6	6	6	.....	5.2	.....	.....
Old Colony and Fall River...	.....	.....	.....	3	6	.....	.....	.....
Connecticut River.....	.....	5	4	4.5	5	3.7	.....	.....
Providence and Worcester....	.....	3	6	7	3	3.8	.....	.....
Cape Cod Branch.....	.....	2.5	6.66	8	3	.....	.....	.....
Worcester and Nashua.....	4.5	4.5	4.5	4.5	2	3.95	.....	.....
Lowell and Lawrence.....	4	4	6	6	4	4.8	.....	.....

¹*Hunt's Merchants' Magazine*, XXXV, 511-512, Oct., 1856. These figures are taken literally from Hunt, but do not total correctly.

²The Old Colony and Fall River Railroads were consolidated into one corporation in 1854. The Norwich and Worcester dividends are paid on preferred stock. The surplus earnings of some of the roads have been carried from income account to the reduction of construction account. 4 per cent of earnings divided by the Eastern Road in 1854 was in East Boston Ferry stock. The dividend of 3 per cent declared by the Cape Cod Branch Railroad Company in 1855 was made payable in stock. January 1, 1851, the 17 roads named cost \$44,313,300; January 1, 1856, \$47,570,500; increase, \$3,266,200. Net earnings of these roads in 1850 were \$2,997,300; in 1855, \$3,035,800; increase, \$38,500.

CHAPTER XIII.

RAILROADS IN NEW YORK.

Opposition to railroads, 353. The Albany system, 356. The New York City system, 363. The Erie Railroad, 366. Roads in central New York, 372. The Rochester system, 374. The Buffalo system, 376. The Utica system, 378. Summary, 379.

OPPOSITION TO RAILROADS.

In their development the railroads of New York have generally passed through two stages, the first characterized by the building of city systems, and the second by consolidation of these city systems into trans-state and interstate routes. The three principal urban foci were New York, Albany-Schenectady-Troy, and, in the neighboring State to the south, Philadelphia. Buffalo constituted a fourth of somewhat less importance in the early days. Rochester, Utica, and other cities, also, sent out lines into neighboring territory, but timidly, and with only indifferent success, until the welding of their local systems with others to form through routes had been accomplished.

Philadelphia and Albany had established their commercial spheres of influence in western New York, with its gateway into the farther West, long before the railroad era. Indeed, two of the early railroads in this section were parts of wider systems of trade centering, in the case of the Ithaca and Owego in Philadelphia, and in the case of the Tioga in Albany. By canal, river, and road, each of these cities sought to extend the territory tributary to it as a market and as a source of export traffic. In 1827, when railroads began to seem a possibility, public inertia, vested interests, and competition with canals and waterways made progress in railroad building exceedingly slow.

At the junction of the Hudson River and the Erie Canal the rivalry of the three cities there situated—Albany, Schenectady, and Troy—gave a certain stimulus to road-building. Each wished to become the entrepôt for freight and passenger traffic. Troy seemed for a time to possess the advantage of position, being situated directly opposite the mouth of the canal, and to overcome this advantage Albany and Schenectady joined hands in building the Mohawk and Hudson Railroad, each hoping to be the chief gainer thereby.

Canal competition was the chief force retarding the construction of railroads. The State had expended an enormous amount of money on canals, and private individuals also had invested heavily in them. Moreover, the canals were highly profitable. In 1832, seven years after its opening, the Erie had a debt of \$6,083,475 and earned \$1,229,483.47, approximately 20 per cent gross on the investment. With two exceptions, the disastrous years of 1834 and 1837, the canal tolls

increased steadily, until in 1841 they amounted to over \$2,000,000.¹ Operating expenses and upkeep were light, since the actual business of transportation was done by privately owned and operated conveyances. After 1830 the State received a net income of over \$1,000,000. The canal was much overcrowded during the season, and in 1833 it was proposed to double its capacity, especially at the Albany locks, and at the same time to lower rates, in order that the business might keep pace with the growing demands of the West, and so unite the two sections of the country more closely. It was estimated in 1838 that \$15,000,000 more would enlarge the Erie Canal sufficiently to accommodate the increase of business.²

By 1839 the agitation in favor of railroads was beginning to be felt, coincident probably with the proposal to relieve the roads of their handicap to the canals, and with the proposal to enlarge greatly the Erie Canal.³ In 1840 the plans for the enlargement of the Erie Canal and for the Genesee and Black River Canals were put into force.⁴ By 1841 the State had appropriated \$3,000,000, of which \$2,150,000 was for the enlargement of the Erie, \$300,000 for the Black River, and \$550,000 for the completion of the Genesee Valley.⁵ The latter had been opened over its first division in September 1840, and at once obtained a large and rapidly increasing business.⁶ The sum of \$1,371.20 was received in tolls the first month in which the division, 36 miles long, was open. More money was put into the canals each year, as the increased use and revenue seemed to demand. By 1843 the net revenue from the canals was \$1,800,000.⁷

The nature of the opposition to railroads indicated that the public regarded them largely as a means of illegal profits by stock-jobbing speculators. Undoubtedly there was some justification for this feeling, but on the other hand the economic usefulness of railroads was greatly underestimated. The law of New York denied the right of citizens of that State or of any other State to transport freight between Albany and Buffalo by railroad. Consequently merchants, manufacturers, and farmers derived but a small proportion of the benefits which railroads were capable of conferring; for until the discrimination against the railroads was removed, they were relatively unsuccessful when compared with the canals.⁸ As to competition with a natural highway like the Hudson River, and with the cheap steamboat travel thereon, it will be shown later that the public did not believe that railroads could find enough business to live.

¹*Niles' Register*, XLI, 333, Dec. 31, 1831; XLV, 59, Sept. 21, 1833; LXI, 288, Jan. 1, 1842.

²*Ibid.*, LIII, 369, Feb. 10, 1838.

³*Ibid.*, LVII, 88, Oct. 5, 1839; 134, Oct. 26, 1839.

⁴*Ibid.*, LIX, 132, Oct. 31, 1840.

⁵*Ibid.*, LX, 312, Oct. 31, 1840.

⁶*Ibid.*, LIX, 116, Oct. 24, 1840.

⁷*Ibid.*, LXV, 180, Nov. 18, 1843.

⁸*Hunt's Merchants' Magazine*, IX, 145, Aug. 1843.

As in so many other cases in our national history, however, the "call of the West" proved stronger than any local conditions. Through New York lay the greatest of the four gateways to the West. The Erie Canal could not care for the traffic, which demanded not only greater expedition, but also a year-round open route. The months from May to November were not adequate for the volume of trade and travel westward, even had they been sufficient for local needs. The need for railroads became more pressing. The widening of the market for Eastern products widened the market for transportation, made the development of through routes necessary, and converted the New York roads from purely local utilities into links in a great chain reaching across the continent.¹

The first specific prohibition of freight came in the charter of the Utica and Schenectady in 1833. The earlier roads had suffered no such limitation, but owing to the opposition of the Erie Canal this road was prohibited from carrying any goods except passengers' baggage. All lines crossing the State were similarly affected, and these prohibitions remained in force until 1844, when by chapter 335 of the laws of that year the roads were permitted to carry freight during the suspension of navigation on the canal² and on payment of tolls. The general incorporation act passed in 1848 required canal tolls from all railroads parallel to canals and within 30 miles of the same, and this provision was renewed in 1850.³ In 1851, however, the railroad men triumphed and the restrictions were removed.

The loss to the State by the construction of canals over country better adapted to railroads was estimated at \$13,000,000. As early as 1831 a writer in *Niles' Register* observed:

"It is now established, we think, that railways will supersede canals. They can be made for far less money, and anywhere. They are not affected by floods or droughts or frost. They engender no disease. The travel on them will be about four times so rapid, steam being used as the motive power."⁴

On the other hand, the message of Governor Throop, in 1832, made the statement that railroads "were not so well adapted to general use as either roads or canals, because they will admit upon their tracks none but public vehicles of a peculiar construction." In 1835 a report was made to the assembly regarding the relative expense of railroads and canals, which concluded that canals in their construction and maintenance were less expensive than railroads, and that the relative cost of conveyance, exclusive of tolls and profits, was as 4.375 to 1, or a little over 4 $\frac{1}{3}$ to 1. But in 1846 a writer in *Hunt's*

¹*Hunt's Merchants' Magazine*, XII, 387, April 1845.

²New York, *Laws*, 1833, chap. 294, sec. 10, p. 466.

³*Ibid.*, 1844, chap. 335, sec. 1, p. 518; 1848, chap. 140, sec. 25, p. 232; 1851, chap. 497, p. 927.

⁴*Niles' Register*, XL, 58, March 26, 1831.

Merchants' Magazine stated that upwards of \$60,000,000 of capital and more than half that amount in interest and expenses—or roughly, \$100,000,000—had been thrown away because such distinguished men as Robert Livingston, Gouverneur Morris, and De Witt Clinton did not sufficiently investigate the merits of railways, which were superseding canals at less than half the expenditure.¹ This shows the contrast between the prevalent theory of the time and the actual development of the roads.

The New York Commissioners of 1811, who made a report to the legislature in accordance with Jonas Platt's resolution of the year previous, made allusion to the probable necessity of using railways at the falls of the Oswego and in the vicinity of Albany. John Stevens urged them to substitute a railroad for the whole distance to Lake Erie, on account of the periodic interruption of travel on a canal. This, Bloomfield, the writer in *Hunt's Merchants' Magazine*, did not approve, because he thought a canal better suited to the route from Albany to the Great Lakes, but he did criticize the State for its failure to substitute railroads for the Chenango, Black River, and Genesee Valley Canals. On the Chenango Canal he estimated that such a substitution would have saved the State \$3,578,130.

The provisions requiring the roads to pay tolls made rates exceedingly high. For example, the distance from Troy to Utica was 110 miles by canal and 95 by the railroad. Canal tolls were 10 cents per hundred pounds for first-class and 5½ cents for second-class traffic. Railroad rates for the same distance, including tolls, were 38 cents for first class and 33 cents for second class. For the longer haul from Troy to Buffalo—364 miles by canal and 328 by railroad—the rates were 33 cents and 18 cents on the canal, and \$1.25 and \$1.09 on the railroad.²

THE ALBANY SYSTEM.

The first railroad in New York is one of the three concerning which the claim of "first in the country" is made. The Mohawk and Hudson, however, seems to have been in fact the third, preceded both by the Carbondale and Honesdale in 1829, and by the Charleston and Hamburg in 1830. Its charter, however, obtained in 1826, was probably the first for what afterward became a successful road. The road was urged upon capitalists for some time before it was undertaken, as a means of saving Schenectady in its rivalry with Troy.³ The building of the road, however, did not prevent Schenectady's remaining an inconspicuous spot on the map for many years. Some of the promoters of the road thought of it as a means of connecting Albany with the Erie Canal at Schenectady and of shifting

¹*Hunt's Merchants' Magazine*, XIV, 249, March 1846.

²*Ibid.*, XVIII, 101-102, Jan. 1848.

³*Albany Argus*, 1825, quoted in Munsell, *Origin, Progress and Vicissitudes of the Mohawk and Hudson Railroad*.

the traffic via the canal to these two cities from Troy, which, being situated on the Hudson opposite the terminus of the canal, bade fair, now that the canal was open, to outstrip both of its rivals. Albany was at the time known colloquially as the "net," because it caught the great volume of travel and freight business that was passing up from New York and Boston and going north and west. Emigration and traffic in an ever-increasing stream were entering territory far beyond the Genesee country. The new railway took over from the Troy route practically all of the passenger traffic, but the great bulk of freight still passed on to the more northern city and into the canal direct, avoiding the costly transshipment that the railroad route involved. The strategic position of the road, however, as the best gateway to the West and also to Canada, gave it a substantial foundation for prosperity.¹

In 1831 a "railroad mania" struck New York State and applications were made to the legislature for charters for roads whose capital aggregated \$22,000,000. Two of these were to make a through line from Buffalo to Albany, a third was to run from Buffalo to Cayuga Lake, and a fourth from Utica to the same place, these last two obviously to form parts of the Pennsylvania system.²

The Mohawk and Hudson suffered from the unwillingness of men with capital to subscribe for its stock. The bill chartering the road passed in 1826, but money was not forthcoming, and although surveys were made, ground was not broken for 4 years. The company built docks and a warehouse on the Hudson at Albany, and also at Schenectady on a basin which permitted boats to pass from the canal alongside the railroad track. The distance by the road was 16 miles, by the canal 30, with the interruption of 27 locks, yet in the case of merchandise the difficulty of transshipment more than neutralized the superior facility of the railroad. Passengers, however, averaged 300 to 400 per day, and this traffic yielded a good revenue. The success of the road caused such a change in public opinion that a new impulse was given to railroad construction. In less than 90 days after the road was opened the stock commanded a premium of 36 per cent.

The two engines used on this road—the *DeWitt Clinton*, an American locomotive, and the *Robert Fulton*, from the shop of Robert Stephenson—seem to have been rather feeble contrivances. It is reported that they were taken off and horse-power substituted during the snows of the first winter they were in use. A contemporary description of the engines is interesting. The *DeWitt Clinton* was 11 feet 6 inches in length, and was mounted on iron wheels 4 feet 8 inches in diameter. The capacity of the boiler was 115 gallons, and it was capable of

¹*Bloodgood*, "Some Account of the Mohawk and Hudson Railroad," in *American Journal of Science and Arts*, XXI, 141-148.

²*Niles' Register*, XLI, 132, Oct. 15, 1831.

sustaining a pressure of several hundred pounds to the square inch, although as designed its working pressure was to be 50 pounds. It was further stated:

"The power of the engine is over 10 horses, and its weight is 6,758½ pounds, being much less in porportion than the best English engine. As it stands on the rails it can be very easily moved by a single hand. . . . The coaches are built like the common post coaches, peculiar to our own country, and will carry, inside and out, about 20 passengers each. They are very comfortable and convenient, but others of the English pattern are in contemplation. . . . The average speed of this engine with 3 loaded cars, equal to about 8 tons, is 15 miles an hour, but it has frequently accomplished, with the same load, 30 miles an hour."¹

The *Robert Fulton* was more compact in appearance and much heavier, weighing 12,472 pounds. Its frame, as long as that of the *DeWitt Clinton*, was mounted on wooden wheels strongly bound with iron.

The success of this road naturally stimulated the incorporation and building of other roads. The Saratoga and Schenectady, incorporated on February 16, 1831, was built to extend the Albany-Schenectady Road northward.² It did not, however, pay well until the construction of the Rensselaer and Saratoga and the Saratoga and Washington, giving a more extended access to the upper Hudson Valley, through a rapidly developing section.³ The road was practically a connection of the Mohawk and Hudson Road. It was capitalized at at \$150,000, with permission to increase this sum to \$300,000.⁴ The directors were given power to establish and change the rates charged, and were to complete the road within 5 years. Its equipment consisted of 2 locomotives of English manufacture, 14 passenger-coaches, with 18 and 24 seats in them, and 24 freight and baggage wagons. At first, for part of the regular route and for all the carriages, in winter, horses were used. In fact, the winter traffic was so light that the regular trains were abandoned altogether, and what business there was was taken care of by a horse and cutter. It was opened for a part of the route on July 12, 1832, and for the remainder of the distance in the spring of 1833. In summer there was passenger traffic to Saratoga Springs. Some freight traffic of building materials, firewood, coal, gypsum, and miscellaneous goods also developed.

The schedules changed according to the time of the year. In July and August trains ran three times daily each way, from September 1 to December 1 and from April 1 to July 1 twice daily, and in the winter months once a day. The size of the trains also varied with the seasons. The rates from Schenectady to Saratoga were, for passen-

¹*American Journal of Sciences and Arts*, XXI, 141 et seq., Jan. 1832.

²Sylvester, *History of Saratoga County*, 129-131.

³Sylvester, *History of Rensselaer County*, 166-167.

⁴Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 100.

gers, \$1.25, or 6 cents per mile; for freight, up to May 1839, \$2.50 per ton of merchants' goods, afterwards \$2, or 9.3 cents per ton-mile. Some other rates were: firewood, per cord of 2 tons, \$1.50; bushel of oats, 3 cents; bushel of wheat or rye, 6 cents; barrel of meal, 18.5 cents; a ton of coal or gypsum, \$1 to Ballston, \$1.25 to Saratoga.

The receipts of this road were, in the first half-year of its existence, July 12 to December 31, 1832, \$7,539.74, wholly from passengers. In 1833 they amounted to \$35,097.61, of which sum \$31,570.10 was from passengers and \$3,527.51 from freight. In 1836 the receipts rose to \$41,018 from passengers and \$6,044 from freight, a total of \$47,062. They fell off sharply in the panic year of 1837, showing a total of only \$28,885, and only rose to \$41,441 by 1839. During the 7 years the income from passengers amounted to \$241,139, while that from freight was only \$33,242, showing that for freight speed was not of sufficient importance to warrant the expense of transshipment. The road carried yearly about 30,000 passengers and 3,500 tons of freight, but the volume of traffic varied greatly by seasons, being heavy in the summer and very light in the winter. The company carried the mail daily each way, under contract, for which it received \$4 per day.

The operating methods of the road were characteristic of the time. The engines were repaired in winter, during which time the train conductors became drivers of the sleighs used to carry the mails and occasional passengers. The superintendent of the road received a salary of \$1,200. The road seems to have paid small dividends, from 4 to 5 per cent, nearly every year, except 1837 and 1838, when the earnings were used for the construction of a station in Saratoga.

The roads from Troy, although Troy and Albany were commercial rivals, are so integral a part of the "Albany system" that they are here included as a part of that system. In 1833 the Troy-Ballston, also known as the Rensselaer and Saratoga Road, from the names of two counties, was chartered as a rival for the traffic to Ballston and Saratoga Springs. It crossed the line of the Champlain Canal at Waterford, thus joining the Hudson River traffic by a railroad with the northern water-route, and attempted to cut the time of passage as the Mohawk and Hudson did between Albany and Schenectady.

The demand for a northwest extension of the Albany lines was expressed by a charter issued in 1833 to a road called the Saratoga and Fort Edward, which was evidently intended to shorten the distance between the Hudson landing either at Troy or Albany and the great dam at Fort Edward. But apparently nothing further was ever done, and the plans for the road were merged in the Saratoga and Washington, chartered in 1834, to extend from Saratoga to Whitehall. The importance of a connection between the Hudson and St. Lawrence by means of Lake Champlain had long been recog-

nized. The building of the Champlain Canal was an effort to provide for the opening of a waterway connecting New York and Albany with Montreal and Quebec. These cities sought more adequate means of access to the rapidly developing country of northern New York. The canal, while serving their purpose for merchandise, was too slow for passengers and for mail. Moreover, a road from Whitehall to Rutland was planned to open up to the Albany market the country lying east in Vermont. The road was chartered in 1833, but the panic of 1837 put an end to the project until 1840.

With steamboats on the Hudson and Lake Champlain and a short railroad from the foot of the lake to Montreal, the time needed for covering this, one of the oldest and most important trade-routes on the continent, would be revolutionized. Construction was started in 1836, but went slowly, and the road was not completed until 1850. Its capital stock was placed at \$600,000, or \$15,000 per mile. This did not cover cost of rolling-stock and equipment, for the road leased the property of the Saratoga and Schenectady. Another short road in this section was chartered in 1833, to extend from Saratoga to Schuylerville, but the road did not materialize.

In the same year that the Whitehall and Rutland and the Saratoga and Schuylerville appeared, two other roads were chartered west and south, namely, the Schoharie and Otsego and the Utica and Schenectady. The first was chartered in order to connect the line of the Erie Canal with the Pennsylvania systems along the Delaware and Susquehanna Rivers. This intention was not immediately carried out, but in 1836 a road was put under construction to run from Canajoharie, on the line both of the Erie Canal and the Utica and Schenectady Railroad, to Catskill, on the Hudson River.

The purpose of the Catskill Railroad, says Gerstner, was to facilitate the trade and transportation of the region, where many manufactories were springing up. There was abundant water-power along the many streams flowing into the Delaware and Susquehanna, and there were at this time (1836) over 40 tanneries in that section south and west of the Mohawk and Hudson Rivers drawing raw materials largely from New York, sending thither their leather. Woolen and cotton mills were being built in many places. All of these manufactories wanted a quick, short route to and from the New York market, for shipping their products and for bringing up materials. The most feasible and direct way seemed to be by a railway to connect with the Hudson at Catskill. Another reason for selecting this point was that navigation of the river was open about 40 days longer at Catskill than at Albany, both because the upper river froze earlier and opened later. Consequently passengers especially would choose the road to the west via Catskill and Utica rather than the difficult and dangerous road to Albany. As yet there was no direct railroad from Albany to New York. In summer the advantage of time would be with this route.

A third reason was the situation of Catskill, almost directly opposite the terminus of the road to Boston, the Hudson and Berkshire, which connected with the Western of Massachusetts. The Catskill-Canajoharie would be an additional link in the chain of roads from Boston to Lake Erie, and would greatly facilitate travel in that direction. Thus the trade rivalry that on a smaller scale is shown in the development around Albany and Troy is here shown in the efforts of Boston to reach the western country, as a rival to New York, which had the Hudson River and Erie Canal as tributary.

A comparatively direct route would be furnished by way of the Hudson and the Catskill Road, and the economic loss by transshipment was not clearly foreseen. The road, 72 miles in length, was capitalized at \$1,000,000 by the charter, but only a small part of the stock was sold. In 1835 the company appealed to the legislature for a loan and received aid to the amount of \$300,000. The company met many disasters by floods, which tore away bridges and track, and although 11 miles were constructed by 1840, the enterprise was abandoned.¹ The stockholders failed to pay the interest on the State loan, and the road was advertised for 6 months and finally sold at auction at the Capitol in Albany in 1842 for \$11,600.

The Hudson and Berkshire, which was to form the connecting link between the Canajoharie and Catskill and the Boston roads, was a short road, perhaps more properly to be classed with the Boston system, as extending that system to the Hudson. Arrangements for the road were made between the States in 1828. In 1832 the line to the Massachusetts boundary was chartered with a capital stock at first set at \$350,000, and later increased to \$450,000. Work was actively in progress in 1836, but the financial crisis interrupted it until 1838, when it was finished to the State line, 2½ miles from West Stockbridge, the terminus of the Western Railroad of Massachusetts, which built over the remaining distance under a Massachusetts charter. The Hudson and Berkshire was considered especially well equipped for freight as well as for passenger traffic.²

In 1836 two roads extending from Troy were chartered—the Lansingburg and Troy and the Troy and Stockbridge—but neither appears to have amounted to anything more than a charter up to 1842. The extension eastward was undertaken by the company chartered in 1834 as the Castleton and West Stockbridge. Castleton was a small town situated on the eastern bank of the Hudson, a short distance below Albany. When the road to connect Albany with the Massachusetts roads was first planned, it was deemed impossible to bridge the Hudson. A scheme was, therefore, set on foot in 1834 to tunnel the river and so make connection with a railroad at Castleton. A company was formed to promote the project, but it failed

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 234.

²*Ibid.*, I, 229.

to secure adequate support and was abandoned, although the city of Albany had agreed to subscribe \$1,000,000 of stock. The railroad project also was given up for the time being, and nothing was done until after 1840, when the Western Railroad of Massachusetts offered to undertake construction, on the basis of the stock subscribed by Albany, a 50 years' lease, and possession of all the profits. The cost of the road was estimated at \$6,647,829, all of which was assumed by the Western. By the inclusion of 15 miles of track belonging to the Hudson and Berkshire, the road was opened to West Stockbridge in December 1841. In August of 1842 even this line was abandoned, and the company had its own right-of-way from Albany to the junction with the Western.¹

Other roads built in the Albany-Schenectady-Troy country at this time were the Troy and Schenectady, chartered in 1837, and the Troy and Greenbush, chartered and built in 1845.² The Troy and Schenectady was built chiefly by the city of Troy, which bonded itself for the purpose to the amount of \$649,140, but State aid was also received to the amount of \$100,000. The Troy and Boston was organized in 1848 and construction begun in 1850. It was the successor to the Troy Macadam and Railroad Company, chartered in 1834 to build a road from Hoosick Street in Troy to Bennington and Pownal in Vermont. At Bennington it was to connect with a road to Boston via Brattleboro.

To the west the first road of importance after the Mohawk and Hudson was the Utica and Schenectady, chartered in 1833. The opposition of the canal interests caused the insertion of the prohibition on freight in its charter, but, in spite of this fact, the stock was marketed readily. The company was also compelled to buy out the old Mohawk Turnpike Company, operating under a charter of 1800, at the rate of \$22.50 per share. When the books of the Utica and Schenectady were opened for subscription, the amount, \$2,000,000, was oversubscribed seven times, such was the popular enthusiasm for the road. Of this amount New York capitalists subscribed \$5,276,000; Albany, \$3,257,100; Utica, \$4,300,000; Schenectady, \$1,541,000.³ In the distribution of the stock, New York subscribers received \$550,000; those in the counties of Albany, Rensselaer, Saratoga, Columbia, Ulster, and Dutchess, \$560,000; in Schenectady, Schoharie, and Montgomery, \$250,000; in Oneida, Herkimer, and the other western and northern counties, \$610,000. The commissioners reserved \$10,000 of the stock for themselves.

The company was organized in September 1833, 5 months after the issuing of its charter, and construction began in 1834. It was

¹*Monthly Chronicle of Events*, II, 252, June 1841; 260, July 1841; III, 52-56, Feb. 1842.

²*Hunt's Merchants' Magazine*, XV, 98, July 1846; XVI, 537, May 1847.

³*Niles' Register*, XLIV, 284, June 29, 1833; 341, July 20, 1833.

empowered to condemn land for its right-of-way if necessary. The road was opened in July 1836, over a distance of 77 miles. It had been constructed in 21 months at a cost of \$20,000 per mile.¹ The road became at once one of the most active and profitable of the time.² For three years Utica was the western terminus of the railroad, until the line westward was met by a line from Syracuse. The road was so profitable that its net profits averaged $13\frac{1}{4}$ per cent per annum, and in 1842 the legislature was asked to lower its maximum rate of fare from the 4 cents per mile permitted by the charter to 2 cents.³ Up to 1843 it had never paid a dividend of less than 10 per cent.⁴ Fares on the road appear to have been made on no particular basis. From Schenectady to the first stop, Hoffman's Ferry, $9\frac{1}{2}$ miles, the fare was $37\frac{1}{2}$ cents, exactly 4 cents a mile, and the same rate was made to Amsterdam, $15\frac{3}{4}$ miles, for $62\frac{1}{2}$ cents. To Utica the fare was \$3, somewhat under 4 cents.⁵ In 1852 the road was said to have done the most profitable business of any railroad in the country.⁶ The net earnings for the 14 years of its operation were sufficient to pay for the whole cost of the road and yield an income on the whole amount invested of over $18\frac{1}{2}$ per cent per annum.

Traffic and profits on the Mohawk and Hudson increased as the mileage of the road increased. In 1839 the road earned $6\frac{1}{2}$ per cent on its capital, and in the next year increased its facilities.⁷ In 1843 the road borrowed \$150,000 at 5 per cent for the purpose of completing the removal of the inclined planes and bringing the road to the level of the two rivers.⁸ This greatly increased its ability to earn profits.

THE NEW YORK CITY SYSTEM.

The New York and Harlem began as a street railway, the first of the kind to be constructed. The "city passenger" or "horse railroad," as it was called, ran from Fourteenth Street to the village of Harlem, 7 miles distant, and remained unique in its service until the opening of the Sixth Avenue road in 1852. From Harlem a steam road was projected, to run near the eastern line of the State and to terminate at a point on the Hudson River opposite Albany, the village of Greenbush, now a part of the city of Rensselaer. A company for this purpose received a charter April 25, 1831, and the work of construction commenced immediately, but numerous delays were experienced, so that in 1834 the company had only 4 miles of road in operation, as far as Yorkville. Permission was given to increase

¹ *Niles' Register*, L, 362, July 30, 1836.

² *Hunt's Merchants' Magazine*, IV, 482, May 1841; V, 469, Nov. 1841; XVIII, 331, March 1848; *Niles' Register*, LX, 416, Aug. 28, 1841.

³ *Niles' Register*, LXI, 304, Jan 8, 1842.

⁴ *Hunt's Merchants' Magazine*, IX, 479, Nov. 1843.

⁵ *Ibid.*, XVIII, 540, May 1848.

⁶ *Ibid.*, XXVII, 117, July 1852.

⁷ *Ibid.*, II, 356, April 1840; *Niles' Register*, LVIII, 16, March 7, 1840.

⁸ *Niles' Register*, LXIII, 208, Nov. 26, 1842; LXIV, 325, July 22, 1843; *Hunt's Merchants' Magazine*, XII, 93, Jan. 1845.

the amount of stock from \$350,000 to \$750,000. By 1839 there were 7½ miles of road completed, at a cost of \$1,035,000. The capital was again increased in this year to \$1,950,000. The road was finally completed to Chatham Four Corners January 19, 1852, where it connected with the Albany and West Stockbridge.¹

An effort to tap the business of the western country by a more direct route than by the Hudson Valley and Erie Canal, for the benefit of New York, was made in the incorporation of the New York and Erie, April 24, 1832. The company was given power to construct a railroad from New York to Lake Erie, to transport persons and property thereon, to regulate their own charges for transportation, and to take tolls upon any part of the line as fast as 10 miles should be completed. The charter did not fix the line of the route, save to confine it to the southern tier of counties. The proposed road was to pass through Owego, where it was to meet the Ithaca and Owego and thus obtain access to the Genesee and Susquehanna Valleys. This road, whose history will be taken up more in detail later, was backed by larger capital than most roads of the period and was moreover secured by the credit of the State of New York.² It was slow in its construction, however, not being begun until 1838, and the first section, to Port Jervis, was not opened until 10 years later.

To the eastward were roads running into Long Island. A company was organized April 25, 1832, to construct a road from Brooklyn to Jamaica. In 1836 this company was merged in the Long Island Railroad, incorporated in 1834 with a capital of \$1,500,000, to build a road from Brooklyn and Williamsburg to Greenport in Suffolk County, a distance of 98 miles. The design of this company was to open a short and quick route to Boston by this road, a ferry from Greenport to Stonington, and thence by the Stonington, Providence and Boston Railroad, making the distance from New York to Boston only 211 miles.

Another group of roads that connected with the New York market, and ultimately made connection with the Philadelphia group, was developed in northern New Jersey. Of these the earliest and most important was the New Jersey Railroad. The charter for this road was granted in 1832. It was opened to traffic to New Brunswick in 1836, and by 1839, when it was finished, the company had expended \$1,800,000 on its construction and equipment. The road ran from Jersey City to New Brunswick, where it connected with the Trenton road, and thus made a continuous rail journey between New York and Philadelphia. This route was about 3 miles longer than that by the Camden and Amboy, but the change from water to rail and

¹Poor, *History of the Railroads and Canals of the United States*, I, 224, 287; Hazard, *United States Commercial and Statistical Register*, I, 166, Sept. 1839; Gordon, *Gazetteer of the State of New York*, 108; *Hunt's Merchants' Magazine*, XXV, 568, Nov. 1851.

²Gordon, *Gazetteer of the State of New York*, 105.

from rail to water on the latter route proved very speedily a distinct handicap. The New Jersey Railroad tapped for the New York markets a rich manufacturing section through the line between Jersey City and Newark. So large and important was the traffic that the road between these two cities was double-tracked. Several other roads radiated from Newark, all likewise tributary to the New York market. Among these were the Paterson and Hudson, chartered in 1832, and the Elizabethtown and Somerville, chartered 1831, but not opened until 1840. These roads made a fairly complete connection between all the larger places in New Jersey adjacent to New York and the metropolis itself and eventually became the bases of lines that reached farther out and penetrated the western country.¹

Communication by rail between New York and Albany along the Hudson Valley grew very slowly, because of the water competition of the Hudson River. In a previous contest between water and rail transportation—that of the New York and New Haven Railroad with the steamboats on the Sound—the water competition was found to be unimportant. On the Hudson, however, where water navigation was much more favored, and apparently more important and well developed, many thought that the railroad would not be able to compete at all, and this fear made subscriptions to the road come in very slowly. The road was talked of as early as 1840, when estimates of its cost were made, and much discussion arose.² It was shown that a connection between Albany and Boston existed, and also that winter travel between Albany and Boston was possible by way of the Housatonic Road.³

In 1842 ground was broken, with elaborate ceremony, both in Westchester County and in Troy, for the road which was to make a much shorter connection between the two cities. It ran almost parallel to the river and was by some distance shorter than the route of the rival Harlem Road, also then under construction for a great part of the distance. There was much opposition to the Hudson River Road from this source, originating in the fear that capitalists would abandon the longer road. No good reason was apparent for going forward with two roads, serving practically the same territory. Hence the Hudson Road project was dropped for a time. New York, however, wanted the road built. Citizens and business men had discovered that the construction of roads influenced prices in the New York markets. Vast quantities of produce were brought in over the Camden and Amboy and other New Jersey roads, the Long Island, and the Erie, then in operation for about 46 miles to Goshen. In the matter of milk alone the saving to the citizens since the bringing of a supply from Goshen, and the consequent reduction in price,

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, II, 91 et seq.

²*Niles' Register*, LIX, 32, Sept. 12, 1840.

³*Ibid.*, LXI, 241, Dec. 18, 1841.

had amounted to over \$200,000 per annum, and the same means had brought about a reduction in the price of meat of over 25 per cent.¹

The demand for the road was renewed in 1846, and after a sharp struggle for 3 months against the opposing forces a new charter was granted. By March 1847 the necessary amount of subscriptions had been received and the company was organized. A small amount of work was done the next summer, but the road had many difficulties with defaulting contractors and was embarrassed by subscriptions being paid slowly. Within the next two years, however, the first and most difficult 75 miles of the road were built and trains were put in operation. One of the most noticeable and surprising effects of the road was the sudden loss of business by the river. A careful record was kept, and though in many cases the fare by water was 50 per cent cheaper, over 80 per cent of the travel immediately turned to the railroad. In some places the loss amounted to the whole of the business.² The question of the competition between waterways and railroads appeared to be settled for all time.³ The last half of the road, from Poughkeepsie to Albany, was completed and opened October 11, 1851. From the first the road paid 7 per cent dividends on its investment of \$60,000 per mile.

No direct all-rail communication between New York and Boston was made until a comparatively late period. A road extended east as far as Bridgeport and New Haven and Hartford, where connections were made to Springfield and from that point to Boston. The only comparatively direct route was by the Long Island Road to Greenport, thence by boat to Stonington, and on by rail to Boston. The time occupied by this route was 9½ hours.

THE ERIE RAILROAD.

The early history of the Erie Railroad, it has been said, is the history of all railroads in the country. It presents a conspicuous instance of a common experience, namely, of coincident demand for and opposition to the railroad, and of the means taken to overcome opposition. Its development from its inception seems to have contemplated extending the territory tributary to the New York market. For this purpose its gage was made wider than the standard, to prevent diversion of traffic to Boston, Philadelphia, or Baltimore. The purpose in this enterprise was the same as that which led to the building of the Genesee Road and the Erie Canal—to provide a highway to the West. The Erie came to completion more slowly than railroads located farther to the north, however, because of the better facilities for marketing their products already possessed by the counties of the southern tier. The far-sighted merchants of Balti-

¹ *Niles' Register*, LXIV, 165, May 13, 1843.

² *Hunt's Merchants' Magazine*, XXII, 278-829, March 1850.

³ *Ibid.*, XXV, 281, Sept. 1851.

more and Philadelphia had grasped the advantage given them through the Susquehanna and Delaware Valleys and had pushed the development of canal and river transportation far into a country that, in some respects, lay adjacent to New York.

In 1779 General James Clinton and General Sullivan, after the close of their expedition against the Indians, proposed a thoroughfare from New York to Lake Erie, to be built at public expense and called the "Appian Way." In 1825 De Witt Clinton, who was interested in a State road to the West, with some others, appealed to Congress to construct one. A survey was ordered, but the report was unfavorable and the effort failed. The route surveyed was, in fact, utterly impracticable, being through the interior of Delaware, Sullivan, Orange, and Rockland Counties to Nyack, an almost straight line from there to Bath, and thence to Ithaca. There seems to have been political opposition at work that resulted in the choice of so wholly impossible a route.

One writer asserts a connection between the building of the Erie and the Ohio Canal Company.¹ Eleazar Lord, who was interested in the Ohio Canal and wanted an outlet for it to New York, succeeded in enlisting the aid of De Witt Clinton in furthering the project. A convention was called at Newburgh, on October 19, 1826, and a report of its action in favor of a road was sent to the legislature of 1827, but no action was taken and the matter was dropped. A canal was suggested, but was declared impracticable by Benjamin Wright, engineer of the Erie Canal, who gave his opinion in favor of a railroad. The attention of the public was further drawn to the idea of a railway by a pamphlet published in 1829 by William Redfield, of New York, entitled a *Sketch of the Geographical Rout [sic] of a Great Railway by which it is proposed to connect the Canals and Navigable Waters of New York, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Missouri, and the Adjacent States and Territories, opening thereby a free communication at all seasons of the year between the Atlantic States and the Great Valleys of the Mississippi*. In this he traced a proposed route from the Hudson to the Mississippi.

The first public expression of desire for a railroad from New York City to southwestern New York was given at a meeting held at Jones's Tavern, Jamestown, New York, September 20, 1831. A notice of application for a charter was drawn up. Other meetings were held at Angelica in Allegany County, October 25; Binghamton, December 15; Owego, December 30; and at other places. Many of the smaller conventions favored building the road in sections, on the ground that no one company would be able to construct a line nearly 500 miles long. The Owego Convention, apparently the most important, was committed to the one-charter plan. The charter was

¹Mott, *Story of Erie*, 3.

granted April 24, 1832. One of its most peculiar provisions was a prohibition upon any connection with roads leading into Pennsylvania or New Jersey, a provision that cost the Erie immense sums of money later, when connections with other roads became an economic necessity.

On May 9, 1832, the incorporators held a meeting, at which it was resolved to appeal to the General Government to make the survey of the railroad, on the ground of its use in more rapidly opening up the public lands. President Jackson approved the request and the survey was ordered in the latter part of June, but was suspended through the influence of the Erie Canal, unless its costs should be paid by the railroad company or by private funds. The survey was made at private expense and a report thereon was made in 1832. The original stock of the company was placed at \$10,000,000, but the company could not sell so large an amount. By an act of 1833, the amount required to be subscribed was reduced to \$1,000,000, and the company was organized August 8, 1833. Various efforts to obtain funds were made. The great land companies then operating in western New York were asked for aid. The Pultney Estate gave right-of-way to some extent. The Holland Land Company refused to do this, but sold 500,000 acres at reduced prices on condition that the purchasers would pledge a portion of it to the company.

In 1833, on November 20, a general railroad convention was held in New York City, at which the State of New York was asked for a "substantial subscription" to the stock of the company. The request was presented to the legislature, but was disapproved in both houses, March 26, 1834. The unfavorable report was recommitted and the committee was instructed to bring in a bill providing for a survey by the State. When reported and passed, however, an appropriation of but \$15,000 was made, only sufficient to make a very slight survey. The company asked the General Government for a grant of 2,000,000 acres of public lands, to be sold for the benefit of the railroad, on condition that the company should carry the mails for 30 years without further compensation. This was the first time that carrying of the mails by a railroad was suggested in this country, but the National Government refused the grant. In 1835 another request for State aid was made. Some sections of the State still wanted the State to construct the road, but the project of State aid was more popular. The first ground for the road was broken in this year (1835) near Deposit, New York, and the road made its first official report.

The renewed petition for aid came before the legislature in 1836. Although every county through which the railroad was to pass, except Orange and Rockland, together with the cities of New York and Brooklyn, sent petitions asking for the passage of the bill, it met

heavy opposition. The bill finally passed, but was drawn in such terms that the conditions could not be met; hence the act was of no benefit. For the next two years the panic of 1837 put an end to further efforts to obtain money. Forty miles of grading were completed in 1836, but the stopping of subscriptions made discontinuance necessary in 1837. Although the counties of the southern tier were nearly discouraged by this time, the promoters of the road evidently were not hopeless, for in 1838 they secured the passage of another act carrying State aid, and securing the terminals at Piedmont and Dunkirk. This provided that the State should loan the road \$100,000 for every \$100,000 paid in by the company, but that contracts for the construction of 10 miles west from the eastern terminus at Piedmont and 10 miles east from the western terminus at Dunkirk should be put under contract first. This was done in 1838. The next year the company asked for a revision of the act providing for State aid, so as to provide for an issue of State stock in the ratio of \$3 to \$1 advanced by the stockholders, but the company failed in this effort. A bill providing for the construction of the road by the State passed the assembly in 1839, came within 2 votes of passing the senate. The southern-tier counties were much in favor of the bill. A new plan of building the road was tried in 1839—that of constructing sections by counties, with money and labor collected from the localities. This plan worked so well in Rockland and Orange Counties that the others in the southern tier adopted it and 117 miles of road were put under contract in 1840, and the work of construction from Elmira to Hornellsville (now Hornell) immediately began.

The Erie seems to have been peculiarly the victim of freak ideas in construction. Not satisfied with the initial mistake of a gage which made trans-shipment necessary if any through connection was to be made, Eleazar Lord, who had recently become president of the road, devised a method of construction upon rows of wooden piling instead of upon a graded road-bed, with the idea that this would be a cheaper method. The piles were mostly of white oak, 10 or 12 inches in diameter, driven below the reach of frost, until the tops of the poles were in most cases only a few inches above the ground. They were set 5 feet apart and capped by cross-ties 12 inches in width, and longitudinal sills a foot square, on which the rails were to rest. Lord believed this would last 20 years. A hundred miles of the piling were put in along the route at a dead loss of from \$600,000 to \$1,000,000, for no track was ever laid upon it.

The year 1840 brought another petition from the counties of the southern tier to the legislature, that the State take up the construction, and a strong report came from the State railroad commission. Under considerable pressure the legislature amended the loan bill so as to issue to the company \$100,000 for each \$50,000 expended by the

company. This brought the sum up to \$2,700,000, in addition to the \$300,000 previously loaned the company. Before the close of 1840 the grading of 10 miles at the western terminal was finished, 47 miles of grading and superstructure in Rockland and Orange counties nearly completed, 30 miles and more of the Susquehanna division prepared for the superstructure, and a large part of the remainder of the work contracted for well under way. But the impossibility of completing the work under the conditions began to become apparent, and Lord resigned the presidency May 28, 1841. The new management opened the eastern portion of the road to traffic in September of the same year,¹ but the road went into the hands of a receiver in the spring of 1842. A few days previously the legislature had extended its charter, in the effort to save the road, but this was unavailing.² Some effort was made to induce the State to take over the road at the price of its lien, but without success.³ The liabilities for work and materials west of Goshen and on the Susquehanna and Western divisions were about \$600,000 and were unprovided for. The road was at that time in operation to Middletown, a distance of 53 miles, with 7 miles at the western end and 4 miles at Corning completed—64 miles in all. Upwards of \$15,000,000 had been spent, with the net result that the part actually in use was hardly in a fit condition for cars to pass over it with safety, and the line west of Binghamton was useless because of the construction on piling. It was thought that \$6,000,000 more would be sufficient to complete the lines to Dunkirk.

The profitableness of the line from New York to Middletown was all that saved the road from utter abandonment in the next three years, when suits were being brought against its more responsible stockholders, and its affairs were generally in very bad shape.⁴ But the fact that the eastern division was not only able to pay expenses, but also to accumulate a considerable surplus, kept public confidence alive to a certain extent, and enabled the stockholders to reorganize the road under a new president, Benjamin Loder.⁵ Stock was offered under this arrangement in November 1844, and met with partial success. The original capital of \$10,000,000 and indebtedness was scaled down to between \$5,000,000 and \$6,000,000—about 50 per cent. In October 1845, the statement of the company's affairs shown in table 50 was issued.⁶

It will be seen that the proceeds of the State loan were not so great as might have been expected, due to the fact that it could not

¹*Niles' Register*, LXI, 64, Sept. 25, 1841; 88, Oct. 9, 1841.

²*Ibid.*, LXII, 112, April 16, 1842, 144; April 30, 1842.

³*Ibid.*, LXIII, 23, Sept. 10, 1842.

⁴*Hunt's Merchants' Magazine*, XIV, 35, Jan. 1846; *Niles' Register*, LXIV, 368, Aug. 5, 1843.

⁵*DeBow's Commercial Review*, XIII, 579, Dec. 1852.

⁶*Hunt's Merchants' Magazine*, XIII, 385, Oct. 1845.

be disposed of at par, on account of the financial depression. The company was authorized to issue bonds to the amount of \$3,000,000, which were oversubscribed nearly twice, and the people of New York began to feel reasonably sure of the road.¹ Work was begun very shortly thereafter, and urgently pushed, in the hope of speedy results.

TABLE 50.

Receipts of company on account of capital and construction, to February 1844,
as follows:

From stockholders.....	\$1,501,830.14
Net proceeds of State loan of \$3,000,000.....	2,599,514.92
Interest received on hypothecated stock.....	39,942.40
Sundry receipts.....	21,848.16
	<hr/>
	4,163,135.62
Amount debts due by company.....	573,814.37
	<hr/>
Total.....	4,736,949.99

SUMMARY OF EXPENDITURES.

53 miles single track, at eastern termination, including pier at Piedmont, \$220,000.....	\$1,760,000
4 miles single track, near Corning.....	43,000
7 miles double track, at western termination.....	162,000
Cars, engines, depots, shops, etc.....	178,558
Work in progress, and finished, of a permanent character.....	885,370
All other expenditures, including right-of-way, surveys, timber, fencing interest on stock, etc.....	1,705,945
	<hr/>
Total.....	4,734,873
Estimated cost completing road from present terminus to Lake Erie, about.....	6,000,000
	<hr/>
Total cost.....	10,734,873

To which is to be added \$1,000,000 for engines, cars, etc.

The State having relinquished its lien on the road on certain conditions, the State loan of \$3,000,000 may be considered as a grant in favor of the road.

As was said above, the city of New York was deeply interested in the road, on account of its influence on the price of foodstuffs, especially of milk. In 1845, \$30,694.20 worth of milk was brought into the city, and a year later, 7,090,430 quarts, valued at \$283,616. In the same year 3,758,440 pounds of butter, valued at \$676,519, and 3,007,890 pounds of dressed meat, valued at \$150,490, came over the road to the metropolis; also large quantities of other produce, including poultry, fruit, and vegetables.²

In 1847 the road issued proposals for a loan of \$750,000 at 7 per cent. A large part of this was taken up at a premium.³ The road was in a very prosperous condition, apparently, with over 8,000 men employed in construction work upon it. Track-laying began again in 1848, the road was opened to Binghamton in the early part of 1849,⁴ and completed to Lake Erie in 1851.

¹*Niles Register*, LXIX, 80, Oct. 4, 1845; 96, Oct. 11, 1845; 108, Oct. 18, 1845.

²*Ibid.*, LXXI, 403, Feb. 27, 1847.

³*Ibid.*, LXXII, 248, June 19, 1847; LXIII, 32, Sept. 11, 1847; 112, Oct. 16, 1847.

⁴*Ibid.*, LXXV, 1, Jan. 3, 1849.

In the western and northern parts of the State short roads for local purposes obtained charters at a very early date. These were, however, railroads in the early sense of the word in most cases, and did not contemplate the use of steam as a motive power. Such a road, for example, was the Great Au Sable, meant to carry the ore from the Adirondack mines to Lake Champlain, but by 1836 its promoters had to content themselves with a "railroad" from Keeseville, the center of the iron and lumber district, and then a thriving town, to Port Kent on Lake Champlain, whence steamboats carried the freight north and south.¹ According to local tradition, the townspeople vigorously opposed the building of a steam road, and through this shortsightedness the thriving village that once promised to become a prosperous market for the whole northern region permitted itself to be outstripped and finally sank into decay.

ROADS IN CENTRAL NEW YORK.

The second road constructed in the State was the Ithaca and Owego. A reference to preceding pages will show the importance attached to the routes from Philadelphia and Baltimore up the Susquehanna and Delaware Valleys into the western country of New York. On this route the only break in the passage by river and canal was between Owego on the Susquehanna and Ithaca on Cayuga Lake, the southern port for the lake and canal system of New York. Each State had developed an extensive system, and laterals were needed to unite the two systems by some more expeditious means than a portage by wagon. Here clearly is a case of a road built to connect two waterways as its immediate purpose, but ultimately to connect the systems of New York and Philadelphia. To quote Gerstner, writing in 1841:

"The purpose of the Ithaca-Owego Railway was to make a connection between the navigable waters of New York State with those of Pennsylvania. It united the Erie Canal, by means of the Cayuga-Seneca Canal and Cayuga Lake, with the headwaters of the Pennsylvania system on the Susquehanna. It was also later one of the links in the chain of roads that connected the New York Central with the Erie at Owego."²

The Ithaca and Owego was chartered on January 28, 1828, with a capital of \$150,000, which was raised in 1832 to \$300,000, and in 1834 to \$450,000. Its charter specified that it was to be a free and open road on which any one might put his own cars and carry his own goods by paying certain fixed tolls. It was constructed by State aid. The charter provision noted seems, according to local tradition, to have bred trouble and dispute between rival transportation companies, and shortly after its opening the road was taken under the management of a single company. Part of the road was

¹Gordon, *Gazetteer of the State of New York*, 450.

²Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 194.

open, and transportation carried on by animal power as early as 1834, but the track for the whole distance was not completely laid until the latter part of 1838. It was not until 1840 that locomotives were the only motive power on this road. The amount of traffic over the road can not be accurately estimated, for during some months in each year tolls were not collected. This road, which crossed the watershed between the St. Lawrence and the Chesapeake, was a very difficult one to build, chiefly from the sharp descent necessary to reach the level of Cayuga Lake from the hills. Originally the descent was made by two inclined planes, later by means of a complicated "switchback."

In 1841, according to Gerstner, the rolling-stock of the Ithaca and Owego consisted of 1 locomotive, 80 freight wagons, 3 passenger wagons, and 8 horses. These all belonged to Richard Varick De Witt, who represented the company. There were about 20 other wagons in operation, belonging to private persons. These paid the company 3 cents per ton per mile as toll. De Witt paid the company 45 per cent of the net receipts. The cost of the road was \$575,393.05, or \$20,014 per mile. The cost of the 2 miles of road nearest Ithaca was about \$100,000. By 1838 only \$105,000 of the \$450,000 of capital stock authorized had been paid in. The rest of the sums needed were secured by private loans. In December 1838, the company sold the State bonds that had been issued to it to the amount of \$287,000, and with the sums received paid part of their debts and issued capital stock to the creditors for the remainder. The actual outlay of the company for all purposes amounted to \$700,000.¹ The total amount loaned by the State to the road amounted to \$650,815. In 1840, by an act which included several other roads in similar grants, the credit of the State was loaned in the sum of \$2,800,000. The road failed to pay interest on this stock, and was sold at auction May 20, 1842.² In 1843 it was given a new charter under the name of Cayuga and Susquehanna.

In 1828, the year in which the charter for the Ithaca and Owego was granted, two other charters in the same section were granted by the legislature, namely, the Canandaigua, designed to connect Canandaigua Lake with the Chemung Canal at Elmira, and the Geneva and Canandaigua, to run between the two towns named, and also to constitute an inter-lake connection for the water traffic of Seneca and Canandaigua lakes. Neither road ever came to anything, however, and the connections desired were made later by the Auburn and Rochester. Other charters, also, were granted; in 1829, the Madison County, to run from Cazenovia to Chittenango, on a branch of the Erie Canal, and the Salina and Port Watson, to run from Onondaga Lake through Syracuse and Onondaga villages

¹Gerstner. *Die Innern Communicationen der Vereinigten Staaten*, I, 198.

²Hunt's *Merchants' Magazine*, XXV, 419, Oct. 1851.

to Homer, Cortland, and Port Watson, on the Tioughnioga, a navigable stream flowing into the Susquehanna. This latter road was not begun within the time limit set by the charter and was, therefore, abandoned. The line was later used by the road from Syracuse to Binghamton. The Ithaca and Catskill and the Port Byron and Auburn also were chartered in 1829, and they also lost their charters by failure to act within the time limit.¹

The first 10 years of railroad building in New York State showed many such abortive charters. In 1833 six roads were chartered and three actually constructed. In 1834 ten were chartered and five died on paper. Thirty-five charters were asked for in 1835, of which none were granted. In 1836 there were 43 charters, of which 7 materialized. Fourteen charters in 1837 were all abortive. In 1838, after many failures, and in consideration of the impossibility of obtaining capital in any other way, the State began to loan its credit to various roads.

The Utica and Syracuse was an extension of the Utica and Schenectady, 52 miles long, and opened in 1839. Its original capital was \$800,000, later increased to \$1,000,000, to meet the actual cost of the road. The road earned 37 per cent net in the first 25 months of its operation, despite its restriction to passenger traffic alone.² With the Buffalo roads to Batavia, it formed the last link in the chain of roads across the State.

THE ROCHESTER SYSTEM.

Rochester, of the cities situated in the western part of the State, was the first to develop its surrounding territory by means of railroads, though followed in this policy very closely by Buffalo. In both cases roads were built out into neighboring territory a short time before any connection was sought to the eastward. The Tonawanda Railroad, chartered in 1832, was a consummation of several plans for a railroad to open up to the Rochester market Genesee County and its thriving villages. The road ran from Rochester to Batavia and was chartered to extend to Attica, through the valley of Tonawanda Creek. The grant of privileges was for 50 years, the capital stock was set at \$500,000, and the company had power to transport passengers and goods under such regulations as they chose to make. The books were opened on August 14, 1833, and the whole amount of stock was subscribed by 96 individuals, all residents of Rochester and the surrounding country.

Construction was begun in 1834. By July 1835, 17 miles were opened, and in May of the next year the whole distance to Batavia was ready for traffic. The motive power was at first horses inside the city limits, the cars not being put to the locomotive until these

¹Gordon, *Gazetteer of the State of New York*, 108.

²*Niles' Register*, LX, 320, July 17, 1841.

limits were passed, a scheme suggestive of the present use of electricity at urban terminals.¹ The second road, also chartered in 1832, was intended to secure more direct communication between Rochester and Lake Ontario, a distance of 7 miles, thus overcoming the falls of the Genesee, long a serious obstacle to trade between the lake and the Upper Genesee Valley, of which Rochester was the entrepôt. The first objective point was at the head of sloop navigation on the lower Genesee, to which place the road was opened in 1833; by 1835 it was extended to Charlotte (Port Genesee) on the lake itself. Horses were used as the motive power for several years.

Two other roads from Rochester south and southwest were chartered and partly built, between 1834 and 1838—the Scottsville and Caledonia, which was to run from Rochester to Batavia over the original route of the Tonawanda Road, through Scottsville, Caledonia, and Leroy to Batavia, and the Medina and Darien. Neither found traffic enough to keep them alive, and so both were abandoned. In 1836 the Dansville and Rochester was chartered, and in 1837 the Leroy and Warsaw, but neither was built.²

The Auburn and Rochester and the Rochester and Batavia were the most important of these roads. Gerstner says that the former was built with a double end in view, *i. e.*, to connect Rochester with Geneva and the rich farming district around Seneca and Canandaigua Lakes, and also to reach out towards the trans-State line. It was chartered in 1836, to run from Rochester to Auburn through Victor, Canandaigua, Manchester, Vienna, Geneva, Waterloo, and Seneca Falls to Auburn. At Pittsford it crossed the Erie Canal, and at Geneva the Cayuga and Seneca Canal. It opened up to Rochester one of the richest and most rapidly growing sections of the State, and made a connection much shorter and more direct than any previously existing routes with the counties along the Pennsylvania line, with the Finger Lake region, and with the towns in the upper Susquehanna Valley.

The Auburn and Rochester, however, worked under considerable difficulties in the first years of its existence. The inhabitants of the country through which it ran had taken care that it should go through all the towns, but did not show enough confidence in it to subscribe for its stock in full. Thus the road was bound to a longer and more difficult route than was necessary, and in addition was handicapped by want of funds. In fact, only a little over half the capital stock was subscribed, and at first but 10 per cent of that sum, \$102,500, was paid in. In the latter part of 1839 a further payment of 10 per cent was made, and the company appealed to the legislature for a loan of

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 159; also Gordon, *Gazetteer of the State of New York*, 460.

²Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 173–174; Gordon, *Gazetteer of the State of New York*, 108.

\$400,000. This received favorable action in the assembly, but was lost in the upper house.

Construction was started in 1838. As an illustration of the difficulties encountered, it may be noted that from the foot of Cayuga Lake the road was compelled to go more than 3 miles out of its way in order to build a bridge, because the legislature had granted a certain bridge company exclusive privileges for 3 miles from the point where they had built. The route was abandoned as part of the direct line across the State in less than 15 years after it was built.¹ It remained a local line from the grain and fruit district around the lakes to the Rochester market, but an exceedingly profitable one. In 1844 its excess of receipts over expenditures amounted to \$100,201, and 5 years later its yearly dividend was 15 per cent.²

The road from Syracuse to Auburn labored under many difficulties besides that imposed upon all roads which paralleled the Erie Canal. The requirement of tolls, however, on this road was especially burdensome, because its distance from the canal made it a competitor practically in a technical sense only, and the requirement was partially removed in 1838, when it was provided that the company should pay tolls only when the canal was open. The road was chartered in 1834, with a capital stock of \$400,000. In 1838, since the amount of stock was not sufficient to complete the road, the State loaned its credit in aid of the company to the amount of \$200,000, to be paid at the rate of \$100,000 for each \$300,000 expended. This enabled the company to complete the road and it was opened to traffic in 1839.³ It declared a semi-annual dividend of 4 per cent in 1843.⁴

Between the years 1832 and 1836 a number of roads were chartered in the central New York territory, of which only a few were built until the railroad-building era of the fifties and sixties. Among these were the Elmira and Williamsport and the Ithaca and Geneva in 1832; the Otsego, the Lake Champlain and Ogdensburg (afterwards known as the Northern Railroad), the Watertown and Rome, the Black River, the Ithaca and Susquehanna, and the Binghamton and Susquehanna in 1833. It will be noticed that most of these were north and south in direction.

THE BUFFALO SYSTEM.

Railroads began to be planned from Buffalo in 1832. In this year charters were issued for the Buffalo and Erie and the Aurora and Buffalo. In 1833 the Mayville and Portland and the Buffalo and Black Rock were chartered; in 1834, the Buffalo and Niagara Falls and the Lockport and Niagara Falls; and in 1835, the road to

¹Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 159.

²*Niles' Register*, LXVI, 281, June 29, 1844; *Hunt's Merchants' Magazine*, XX, 222, Feb. 1849.

³Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 155.

⁴*Niles' Register*, LXIV, 368, Aug. 5, 1854.

Lewiston.¹ The western roads, though chartered earlier, were given over in favor of the roads connecting with the Erie Canal and the lower Niagara River. The first built was the Buffalo and Black Rock, between the city of Buffalo and the village of Black Rock, 3 miles distant, where the Erie Canal connected with Lake Erie by a large harbor. The road was begun in 1833 and finished in 1834. Its capital stock was set at \$100,000, of which, according to Gerstner, only a small part was paid in. It was operated at first solely for passengers, and used horses as motive-power.²

The same year (1834) that saw this road in running order saw charters issued to the Buffalo and Niagara Falls and to the Lockport and Niagara Falls. The first was chartered May 3, 1834, with a capital stock of \$110,000, later raised to \$150,000. It was opened for traffic in 1836. This road ran from Buffalo to Niagara Falls through Black Rock and Tonawanda.³ Its chief purpose seems to have been at first to carry passengers to and from Niagara Falls. The first section of the road, to Black Rock, used the horse-railroad above described, since the city authorities of Buffalo would not permit a locomotive to enter the town.

The Lockport and Niagara Falls Railroad was chartered in 1834 with a capital of \$110,000, which was raised in 1835 to \$175,000. The road was obliged to commence construction within two years and to complete its work in five years. It was permitted to charge a maximum of 4 cents per mile for passengers, and no restrictions were placed upon its carriage of freight. Its purpose was chiefly to carry passengers from Lockport to Niagara Falls and Lewiston, thus making a shorter route not only to the falls themselves, but also for travelers into Canada. Horses were used on the road from its opening on May 1, 1837, until August of the same year, because not all the rails had been laid, but from that time on it was run by locomotives. The cost of the road averaged \$8,083 per mile.

Gerstner speaks of the Lockport-Niagara Falls Railroad as closed during the two coldest months of the year, when what traffic there was went by sleighs.⁴ In the late fall and early spring the traffic was only sufficient to warrant one train each way per day; in the other 6 months two trains ran daily. The fare on this road was 87½ cents for the whole distance between Lockport and Niagara Falls, about 3.6 cents per mile. Freight rates ranged from 25 cents per hundred pounds for goods in less than carload lots to 15.5 cents per hundred pounds in larger quantities, and a few commodity rates for certain articles. In the 6 months when traffic was heaviest the trains consisted of 3 passenger coaches, 1 baggage car, and 1 freight

¹Gordon, *Gazetteer of the State of New York*, 108.

²Gerstner, *Die Innern Communicationen der Vereinigten Staaten*, I, 183.

³*Ibid.*, 176.

⁴*Ibid.*, 185.

car; in spring and fall, 1 passenger car was taken off and an extra freight car put on, showing that the freight business grew at these times, probably because of the closing of the canal. At times coaches drawn by horses were added when the passenger traffic was especially heavy.

The branch road from Niagara to Lewiston, on the lower Niagara opposite the Canadian city of Queenstown, was but 6 miles long, and for the first years of its existence was conducted by means of horse-drawn vehicles.

The last link in the trans-State line was made by the Attica and Buffalo, begun in 1841 and opened to traffic in 1842, over a distance of 31 miles. All of the central roads were built to a uniform gage of 4 feet 8½ inches. The 8 roads which formed the line of the Central had cost, in 1847, in the neighborhood of \$8,735,782, divided as follows: Mohawk and Hudson, 17 miles long, cost \$1,472,966.75; Utica and Schenectady, 78 miles, \$2,265,114.80; Syracuse and Utica, 53 miles, \$1,187,311.65; Auburn and Syracuse, 26 miles, \$679,186.62; Auburn and Rochester, 78 miles, \$1,865,044.46; the Tonawanda Road, 43½ miles, \$753,555.19; the Attica and Buffalo, 31 miles, \$306,704.52; and the Buffalo and Niagara Falls, 22 miles, \$205,902.95.¹

The roads operated under their separate charters until after the removal of their disabilities in competition with the canal in 1851. The transfer of passengers at the various points was more easily accomplished than of freight. Through checking of baggage came about in 1845. In 1853 the legislature authorized the consolidation of the several companies into one corporation, and the permission was promptly used. The public attitude towards railways changed very rapidly, and the demand for through routing and quick transportation of freight was developing entirely new conceptions of the carrying business.

THE UTICA SYSTEM.

In 1833 four charters were obtained for the purpose of opening up the country north and south of Utica. These were the Utica and Susquehanna, the Watertown and Rome, the Lake Champlain and Ogdensburg, and the Binghamton and Susquehanna. All of these were delayed in building until after 1840. In 1838 the legislature appropriated \$4,000 for a survey of a route from Ogdensburg to Lake Champlain, and notice was taken of the matter again in 1840. In 1847 a report concerning the road was made to the legislature, and shortly afterward the Northern Railroad, from Ogdensburg to Lake Champlain, passing through Malone to Rouse's Point, was put under construction and opened in 1851. The Rome and Watertown was opened in the same year. The Northern Road was capitalized at

¹Reports of roads to legislature, in *Niles' Register*, LXXII, 127, April 24, 1847.

\$2,000,000, and the Rome and Watertown at \$1,500,000. Neither road was able to sell its stock for nearly its par value. The Watertown and Rome received \$237,849.46, the Northern \$1,329,517.59. The Northern Road cost, up to 1850, \$1,863,291.34, and the Rome and Watertown, at the same date, \$221,961.39. The Northern financed the excess of cost over the proceeds of stock sales by selling \$338,100 worth of bonds. It also carried a floating debt of over \$300,000.¹ The Oswego and Syracuse, 35 miles long, connecting the thriving lake port and manufacturing town with the lines radiating from Syracuse, was built in the same period. Its capitalization was \$350,000 and in 1851 its receipts exceeded expenses by \$39,140, or more than half its gross income.²

The success of the Ithaca and Owego Road, as an agency of commerce, if not as a source of financial profit to its owners, in 1840 prompted a second connection between the New York and Pennsylvania systems of internal transportation by the Tioga Road, also called the Chemung. It extended from Corning, New York, to Blossburg, Pennsylvania, a distance of 40 miles. From Corning the Chemung Canal extended to Seneca Lake, and thence there was a continuous route by water to Albany. As the chief purpose of the road and canal route was to bring coal to Albany from the Blossburg mines, it seems to have been practically an extension of the Albany system.

SUMMARY.

The first 20 years of railroad building in New York State resulted in a very extensive system of roads crossing the State east and west and north and south, connecting the principal cities and developing the country around them. Thirty roads were in operation in 1850, a remarkable number considering the difficulties under which the roads were constructed. Twenty-five years earlier the farmers of western New York had waited for the winter's sleighing to team their crops to market, often a week's drive away. When prices would not pay for this teaming—and many times this proved to be the case—the grain was left unthrashed and fed to cattle. The coming of the railroad meant not only the development of the cities and villages, but of the rural districts as well.

The railway system in New York State in 1850 and immediately after was a fairly well-developed and well-articulated group of roads. Although north-and-south links were missing, or only projected, in general the railroad routes of the present day were established by that time. The main lines of road, from New York to Buffalo by way of Albany and New York to Buffalo by the southern-tier route, were completed. There was, however, no such direct connection between

¹*Hunt's Merchants' Magazine*, XXII, 566, May 1850; *Niles' Register*, LXIX, 16, Sept. 6, 1845.

²*Hunt's Merchants' Magazine*, XXIV, 260, Feb. 1851.

New York and Montreal as at present. A route by way of Whitehall and the Rutland Road to Burlington and thence to the Canadian city was the most direct way. From Saratoga a road was planned to Sackett's Harbor, over a line at present used by some branch roads, but the through line contemplated was not a practicable one. From Rome a road ran to Watertown and Cape Vincent, with a branch to Sackett's Harbor, and another was in progress of construction from Rome to Ogdensburg, to connect with the Northern, now the Ogdensburg and Lake Champlain. Other roads were planned in this northern part of the State as feeders to the Watertown Road. From Binghamton, on the southern border, roads were in process of construction to Syracuse, Utica, and Albany, thus at three points connecting the Erie with the New York Central and opening up a shorter route to Philadelphia and New York.

To the south a road ran from Binghamton to Scranton and the lower Susquehanna. At Syracuse a road ran to Oswego on Lake Ontario, and another north-and-south road was planned from Ithaca to Auburn and Sodus Point. Already the old circuitous route from Syracuse to Rochester had become a secondary part of the main line across the State and a new and almost straight road was built between the two cities, via Port Byron and Lyons. From Buffalo a whole series of roads had been built or were building to Elmira on the Erie via Batavia and Canandaigua, with a westward extension from Batavia to Niagara Falls direct. A road called the Buffalo and New York City, now part of the Delaware and Lackawanna, ran from Buffalo to Corning and Elmira, connecting at both points with roads into Pennsylvania, and a road was projected from Buffalo to Olean. The Erie, after passing through Elmira, turned north to Hornellsville, and then southwest to Olean and northwest to Dunkirk. Its most direct connection with Buffalo was by the Buffalo and New York City at Corning, though a more direct connection would be made by the proposed road from Buffalo to Olean. From Buffalo a road was built to Erie, and the Erie and New York City was in process of construction from Erie to Olean, running close to the southern line of the State. From Olean it was continued by the Olean and Corning to the latter city. The State had over 1,361 miles of railroad in operation at this time. While not all the roads described as in process of construction were actually ever built along the routes then laid out, the system of trans-state lines and laterals was pretty well established, with the exception of the northern section.

Table 51 shows roads in New York in 1851, those under construction, and the cost of completed roads.

TABLE 51.—*Roads in New York in 1851, with roads under construction and cost of completed roads.*¹

Name of railroad.	Number of miles, including branches.	Number of miles, constructing.	Cost.
Albany and Binghamton.....	...	132	.....
Albany and Schenectady.....	17	...	\$1,711,412
Attica and Buffalo.....	32	...	906,915
Buffalo and Coshocton Valley.....	...	133	.....
Buffalo and Dunkirk.....	...	42	.....
Buffalo and Niagara Falls.....	22	...	428,241
Buffalo and Black Rock.....	3	...	25,000
Buffalo and State Line.....	...	67	.....
Canandaigua and Corning.....	...	70	.....
Canandaigua and Niagara Falls.....	...	92	.....
Cayuga and Susquehanna.....	35	...	580,311
Chemung.....	21	...	450,000
Dunkirk and State Line.....	...	28	.....
Hornellsville and Attica.....	...	90	.....
Hudson and Berkshire.....	34	...	821,331
Hudson River.....	110	34	6,666,682
Jefferson and Canandaigua.....	45	...	1,000,000
Lewiston.....	10	...	120,000
Lockport and Niagara Falls.....	24	...	210,000
Lockport and Rochester.....	...	68	.....
Long Island.....	95	...	2,091,341
Mohawk Valley.....	...	78	.....
Newburg Branch.....	19	...	500,000
New York and Erie.....	467	...	20,323,581
New York and Harlem.....	80	...	4,666,208
Northern (Ogdensburg).....	117	...	2,979,937
Oswego and Syracuse.....	35	...	571,774
Plattsburg and Montreal.....	...	51	.....
Rensselaer and Saratoga.....	32	...	687,324
Rochester and Syracuse.....	104	...	4,200,000
Rome, Watertown and St. Vincent....	53	43	603,457
Sackett's Harbor and Ellisburg.....	...	30	.....
Saratoga and Schenectady.....	22	...	396,380
Saratoga and Washington.....	52	...	1,402,505
Schenectady and Troy.....	20	...	680,046
Skaneateles and Jordan.....	5	...	28,361
Syracuse and Binghamton.....	...	80	.....
Tonawanda.....	43	...	1,216,821
Troy and Greenbush.....	6	...	282,528
Utica and Binghamton.....	...	60	.....
Utica and Schenectady.....	78	...	4,143,918
Utica and Syracuse.....	53	...	2,400,084
Whitehall and Castleton.....	15	...	600,000

¹From *Hunt's Merchants' Magazine*, XXV, 117, July 1851.

CHAPTER XIV.

RAILROADS IN THE MIDDLE ATLANTIC STATES.

New Jersey, 382. Pennsylvania, 386. Maryland, 397.

NEW JERSEY.

Part of the development of the New Jersey roads has been discussed under the heading of the New York City system. New Jersey shared in the enthusiasm of its neighbors for railroad building, and began at a very early date to plan improved facilities for transportation within its borders. In 1830 two companies were chartered for this purpose, the Camden and Amboy Railroad Company and the Delaware and Raritan Canal Company. The combined purpose of these two enterprises was to improve transportation and freight-carriage between Philadelphia and New York, and for that purpose the two companies were united in 1831. Within the next two years several companies with an aggregate capital of over \$7,140,000 were chartered.¹ Not all of the projects were actually carried into execution. Thus, the West Jersey Railroad, designed to connect with the Camden and Amboy, and thence to extend to Penn's Neck, upon the Delaware River, was authorized February 12, 1831, but lost its charter by failure to commence work within the time specified.

The Paterson and Hudson, a road promoted by the city of Paterson, was authorized January 21, 1831, to make a railroad or lateral roads from Paterson to Weehawken, and thence to any other suitable place on the Hudson River opposite the city of New York. So eager was Paterson for this road that the first day the subscription books were opened for the necessary amount of \$250,000, the sum of \$1,271,750 was subscribed.² This road was to be a public highway, free to all persons paying the prescribed toll, and the State was to have the right of purchase at the end of 50 years. A few days later, on February 3, 1831, the Paterson Junction Railroad Company was incorporated to construct a railroad or lateral roads from the Morris Canal to intersect the Paterson and Hudson Railroad at Paterson. This also was declared a public highway. The Paterson and Fort Lee, chartered March 8, 1832, to build a road from Paterson to Fort Lee; the Elizabethtown and Somerville, chartered February 9, 1831; the New Jersey, Hudson and Delaware Railroad Company, chartered March 8, 1832, with an indefinite location; and the Delaware and Johnstown Rail and Macadamized Road Company, chartered February 11, 1833, were all roads chartered but never begun.

¹Poor, *History of the Railroads and Canals of the United States*, I, 377; also Gordon, *Gazetteer of the State of New Jersey*, 18.

²*Niles' Register*, XL, 50, March 19, 1831.

The second road actually constructed—the Camden and Amboy being the first—was that of the New Jersey Railroad and Transportation Company, incorporated March 7, 1832, and organized the following June. The organization of this enterprise was hailed as a great event in the development of the State.¹ Construction began in 1833, and the road was opened from Jersey City to Newark in September 1834, to Elizabethtown in 1835, and to Rahway and East New Brunswick in 1836. The only gap between New York and Philadelphia was from New Brunswick to Trenton. "When this is done," wrote a contemporary, "Philadelphia and New York will be within 5 hours of each other, and it is calculated that the whole distance between New York and Washington may be regularly accomplished in 13 hours, equaling in speed the achievements of a first-rate horse express."²

The New Jersey Railroad was largely in the interest of New York and its markets, as the Camden and Amboy was of Philadelphia. The road suffered for a time from the depression in business in the late thirties, but revived in 1840, and in 1841 declared a semiannual dividend of 3 per cent.³ In 1839 the State legislature passed an act regulating the fare on railroads in the State, and established a maximum of 4 cents a mile.⁴

The Camden and Amboy Railroad occupied a peculiar position in the State, and also in the history of railroading, from its monopoly privileges. It was incorporated under an act of February 4, 1830, to construct a railroad or roads, from the Delaware River, in the county of Gloucester, to some point on Raritan Bay. The right-of-way was to be 100 feet wide, with as many sets of tracks as might be necessary, with a lateral road to Bordentown. It was to be begun within 2 years and completed within 9 years. In lieu of taxes, the company was to pay a transit duty of 10 cents for each passenger and 15 cents for each ton of merchandise. The company was allowed to regulate tolls, and was required to provide suitable steam or other vessels, at either extremity of the road, for the transportation of passengers. The State reserved to itself the right to purchase the roads at and after the expiration of 30 years, at a valuation to be made according to law. The transit dues were to cease in case the State chartered any other railroad for the transportation of passengers across the State from Philadelphia to New York, commencing and terminating within 3 miles of the Camden and Amboy.⁵

Such was the monopoly granted the road. The need, however, was very great, and at this early stage it was often felt necessary to give great inducements to secure roads.⁶ It is difficult to realize the condi-

¹*Niles' Register*, XLII, 79, March 31, 1832.

²*Ibid.*, XLIX, 122, Oct. 24, 1835; L, 342, July 16, 1836.

³*Hunt's Merchants' Magazine*, V, 283, Sept. 1841.

⁴*Niles' Register*, LVI, 96, April 6, 1839.

⁵Gordon, *Gazetteer of the State of New Jersey*, 18-19.

⁶Hazard, *United States Commercial and Statistical Register*, II, 229, April 1840.

tion of the country between Washington and Philadelphia and New York before the railroads were built. It was a good 6 days' journey from Washington to New York, and generally occupied 8 days. There was an excellent turnpike and a daily stage, but the wealthier sort still went in their own carriages, and a great many others went on horseback. The sand in summer and the mud in winter made traveling so difficult that the country was rarely visited, and was undeveloped. All this was changed "as if by enchantment" as soon as the Camden and Amboy and the New Jersey Railroads were opened. The managers of these roads had the good sense to develop local freight, especially in vegetables and other country produce, although in the first years the local freight yielded less than \$100 per year. This policy led to the development of all the surrounding country, even the old highway being much improved.¹

The chartering of the railroad had a disastrous effect upon the Delaware and Raritan Canal. The canal company found that even the prospect of a railroad so impaired its ability to obtain capital that in self-defense it sought to have both projects put under one company. The legislature wanted sloop navigation between Philadelphia and New York, and foresaw the impossibility of securing such intercourse if the railroad drew to itself all available capital. It therefore granted the consolidation,² which took place February 15, 1831. The united companies immediately began operations, finishing the railroad in 1834 and the canal in 1838. The first section of the road, between Bordentown and Hightstown, 14 miles, was opened in October 1832, and the section between Hightstown and South Amboy, 22 miles, in December of the same year. In the winter of 1833 the line was extended from Bordentown and Rancocas, 15½ miles, and in the spring of 1834 the whole line from Camden to Amboy, 61¼ miles, was finished. It was constructed in a very substantial manner, with cast-iron rails supported upon blocks of stone, or upon wooden sleepers. The part from Bordentown to Camden was less solidly constructed, for it was supposed that it would be used during only a few months each year, and that, therefore, it would not be subjected to the wear and strain of the road from Bordentown to New York. From February to September 1833 the carriages were commonly drawn by horses; then locomotives were put on, being used at first for only one of the three daily trips. At South Amboy the road connected with steamers for New York.

The Camden and Amboy is a conspicuous instance of monopoly. It became an exceedingly profitable road, and from it the State derived a large revenue. The State owned one-fifteenth of the whole stock, upon which it received dividends, which, added to the transit duties

¹Flint, *Railroads of the United States*, 230-235.

²Delaware and Raritan Canal Company, *Annual Report*, 1831.

secured by the charter, amounted to nearly one-fifth of the net earnings. The stock was quoted above par by 1848, and with dividends at 12 per cent gave the State in that year an income of over \$80,000, making the amount received by the State since the opening of the road more than \$670,000.¹ Nevertheless, in 1850 charges were preferred against the company on the ground that it had been guilty of fraudulent practices designed to withhold large sums from the State. The investigation which followed exonerated the company, although it was found that some \$10,000 more than had been received should have been paid. It may be noted that other States in similar cases had invested large sums at an almost total loss.

The road seems to have been well run with a view to the convenience of the public. In 1838 the "Pea Line," as it was called, was started from Camden to New York for the benefit of the market-gardeners. It began with occasional trips made by 2 cars, but the demand increased steadily, and the traffic proved profitable beyond all expectations, so that by 1840 trips were run daily, often with as many as 16 cars, loaded with peas, peaches, potatoes, asparagus, live-stock, and other produce. Upon one occasion a single shipment of 30 tons of green corn was made, a very large shipment for the time.

Some minor details are of interest. During January 1835, the children at Bordentown earned pocket-money by selling hot bricks at a sixpence each to the chilled passengers. In the winter of 1836, the company congratulated itself that the trains had never missed a trip since the road opened. The Postmaster General in the same year withdrew the carriage of the mails from the railroad line, after some experience with it, much to the displeasure of the company. In 1835, the Camden and Amboy sued the Brunswick and Trenton Turnpike Company to prevent the latter company from laying rails or otherwise converting their road into a railroad. A contemporary remarked that the case might decide whether a "fool legislature" had power to grant an "eternal" monopoly.²

There was a great deal of criticism and opposition to the road throughout the State, and finally the company offered to surrender its monopoly privileges if the State would cancel the requirement of transit dues. The company also offered to sell out entirely to the State upon an equitable valuation of its property. The legislature rejected the company's "offers," and the road retained its charter privileges.³ On its part, however, the road yielded to the attacks of the public which had grown out of the demand for more lines, and began the construction of a system of short lines connecting with the New Jersey Railroad at New Brunswick, Trenton, and other places.

¹*Hunt's Merchants' Magazine*, XVIII, 432-433, April 1848.

²*Niles' Register*, XLIX, 19, Sept. 12, 1835.

³*Ibid.*, L, 33, March 19, 1836; L, 364, July 30, 1836.

The directors of the road were quite alive to the value of their property, and used every means to increase their revenues from it. They were accused of all manner of trickery in connection with their income. So far as possible, information of all kinds was refused, even regarding the equipment of the road, and it was thought that dividends were paid in addition to those stated. The legal maximum fare from New York to Philadelphia was \$3, but the law was evaded by the road's crossing the Delaware at Trenton and continuing the remainder of the way on the Pennsylvania side upon a road chartered in that State. In 1848 the New Jersey legislature tried to remedy this by a resolution instructing the State's directors of the Camden and Amboy to insist upon the establishment of a daily line between New York and Philadelphia by way of Camden and New Brunswick at the legal maximum.¹

PENNSYLVANIA.²

In Pennsylvania, a policy of internal improvements had been systematically followed for a number of years before the coming of the railroad in 1830. Originally, the schemes of railroad construction in the State contemplated, on the one hand, a connection with New York City, and on the other completion of the water-transportation systems, which tapped the trade of western Pennsylvania and New York State, for the benefit of Philadelphia. As early as 1825, and while the Delaware and Hudson Canal Company was engaged in procuring corporate privileges from the Pennsylvania legislature, a group of citizens were developing a project for opening up a northern outlet to the Susquehanna. The chief object was to develop traffic in the southern and western counties of New York, distributing Lackawanna coal in those counties, and drawing thence the products of the region. In addition, the road would open up a connection between the Erie Canal and the North River, through the Delaware and Hudson Canal. In 1826 the Lackawanna Railroad was organized, but, with the exception of the Carbondale and Honesdale, a short road from the mines to water transportation, nothing was done with it. The first passenger train in the State of Pennsylvania made its trial trip in November 1832, over the Philadelphia, Germantown, and Norristown road, a short suburban line. The train was drawn by a locomotive built by M. W. Baldwin, founder of the great Baldwin Locomotive Works.³

Until 1821, Pennsylvania confined its appropriations in aid of internal improvements to funds accumulated by taxation. It contributed, however, liberally to the roads and bridges of the State through these appropriations from the State treasury; it had also subscribed to the stock of turnpike companies, bridge companies, and banks. In 1821

¹*Hunt's Merchants' Magazine*, XVIII, 547, May 1848.

²For fuller details see Bishop, *The State Works of Pennsylvania*, which has been used freely in the following pages.

³Kennedy, *Wonders and Curiosities of the Railway*, 52.

it entered upon a policy of obtaining funds by borrowing. Aroused by the approaching completion of the Erie Canal, the legislature in 1825 passed an act providing for the appointment of canal commissioners to undertake preparations for the establishment of a canal between the eastern and western waters of the State.¹ In the following year the construction of the Pennsylvania Canal was authorized along the portion of the route between Philadelphia and Pittsburgh where a waterway was practicable. Over the hills between the Schuylkill and the Susquehanna and across the crest of the Alleghenies between Hollidaysburg and Johnstown, canal construction was clearly impracticable. The legislature, therefore, authorized in 1828 the construction of a line of railroad to connect Philadelphia with the eastern terminus of the canal system at Columbia,² and three years later provided for the Portage Railroad over the mountains.³

The Philadelphia and Columbia Railroad was not only one of the earliest works of its kind in the country, but the "first railroad undertaken in any part of the world by a government." This road, the first link in the westward chain of the State works, commenced at the intersection of Vine and Broad streets in Philadelphia and terminated at Columbia on the Susquehanna, a distance of 81.6 miles, opening direct communication between the valleys of the Delaware and the Susquehanna and intersecting those of the Schuylkill, Brandywine, and Conestoga. The entire road was opened in 1834.

As originally built, the Columbia Road had two inclined planes, while the Portage Road was largely a series of inclined planes worked by stationary engines at the head of the planes. When the Columbia Road was open for use the prevailing opinion regarding its method of operation was that farmers and other citizens along the line should use the railroad as they used the turnpike, *i. e.*, purchase suitable wagons to be hauled by animal power and pay a certain toll to the State for the use of the roadway. This method of operation was put into practice for a time. The demonstration of the practicability of the steam-engine in 1832, however, resulted in its adoption for motive-power in a short time. The State supplied the locomotive engines for the transportation of goods and passengers, while the cars were owned by individuals or companies. The legislature authorized the construction of the road on March 24, 1828, and in March 1834 a single track along the entire route from Philadelphia to Columbia was open for travel. In October of the same year the second track was completed. Two miles from the point of commencement the road crossed the Schuylkill by a viaduct 984 feet in length and immediately ascended an inclined plane 2,805 feet in length and 187 feet in height. The planes were

¹Pennsylvania, *Laws*, 1824-25, chap. 126, p. 238.

²*Ibid.*, 1827-28, No. 98, p. 222.

³*Ibid.*, 1830-31, No. 104, sec. 3, p. 195.

never satisfactory, being slow and expensive in operation, and were scarcely finished before efforts were made to avoid them. On November 30, 1836, a contract was entered into for the construction of a road $6\frac{1}{2}$ miles long to obviate the use of the Columbia plane. At its completion in March 1840 the plane was abandoned. One track of the Schuylkill plane was discarded in October 1850 and the other in the following December, by the construction of the West Philadelphia Railroad, from a point near the present Ardmore Station to the west end of the Market Street bridge. Various lateral extensions of the road were made.

The Allegheny Portage Road was never very successful. It commenced at the termination of the Juniata Division of the Pennsylvania Canal at Hollidaysburg and, pursuing a northwesterly course to Blair's Gap Summit, descended the valley of the mountain branch of the Conemaugh to Johnstown. There it joined the western division of the canal. The rise from Hollidaysburg to the summit was 1,398.7 feet in a distance of 10.1 miles. From there to Johnstown the fall was 1,171.58 feet in a distance of 26.59 miles.¹ The principal part of the elevation was overcome by 10 straight inclined planes operated by stationary engines. There were five of these planes on either side of the mountain, with a total length of about $4\frac{1}{2}$ miles. Their angles of inclination ranged from 4 degrees 9 minutes to 5 degrees 51 minutes. A tunnel at the Staple Bend of the Conemaugh, 4 miles east of Johnstown, attracted much attention. It was 901 feet long, 20 feet wide, and 19 feet high within the arch. It was the first tunnel built in America.² The first track was ready in 1834, although in a very imperfect condition. Not until late in the spring of the following year was the second track completed.

At first the State furnished the motive-power only on the inclined planes, and the road was used as a public highway. The dissatisfaction accompanying this method of operation soon resulted in the State furnishing also locomotive power on the grade-lines between the planes. The planes were never satisfactory, however, and suggestions for avoiding them were made immediately after the opening of the road, but the State authorities did not see fit to give serious attention to the matter until after the beginning of the Pennsylvania system in 1847.

After encountering many difficulties and expending several times the amount of money estimated as necessary for building it, a new Portage Railroad was completed in 1855. Although in an imperfect condition, it was then put into operation, and the old line, though somewhat shorter, ceased to be used. Two years later the road was sold, with the Philadelphia and Columbia, to the Pennsylvania Railroad, under

¹Tanner, *Canals and Railroads of the United States*, 126.

²Wilson, "The Allegheny Portage Railroad," in *Annual Report of the Secretary of Internal Affairs of Pennsylvania*, 1898-99, pt. iv, Doc. No. 8, p. lxcii.

the act of April 27, 1854. Its history thereafter showed conclusively that it had outlived its usefulness. The Pennsylvania Railroad Company operated the Portage Road for the three months of August, September, and October, 1857, at a loss of \$7,220.14. It was then closed and the traffic transferred to the company's own line across the mountains. The following year the road was dismantled and the materials removed. Most of the rails were used on the Pittsburgh, Fort Wayne and Chicago, from Plymouth to Chicago. Many of the stone blocks which had served as a support or foundation for the rails were removed to Altoona and used in the masonry of the railway shops.¹

As a rival to the Erie Canal, the scheme of the Columbia and Portage Roads was a failure. To avoid the delay and expense of using the planes, Philadelphia merchants soon found it to their interest to pay the freight on their goods to New York and then ship to the West over the Erie Canal. Consequently these public works in Pennsylvania were never profitable except indirectly as a general benefit to trade. For the main line a debt of \$33,364,555 was ultimately incurred. The Lake Erie connection of 185 miles, and the improvements on the Susquehanna and Delaware, besides lateral canals and railroads, involved the State in a debt of over \$40,000,000 in 15 years. Ten years after the main line was opened the State offered to sell, but not until the Pennsylvania Railroad came into the market in 1857 was this possible. The price then paid was \$7,500,000, \$500,000 less than the amount expended in the construction of the Columbia and Portage Roads.

The State of Pennsylvania made one more attempt at the building of railways when it chartered the Sunbury and Erie Railroad. Sunbury, near the confluence of the north and west branches of the Susquehanna, was connected with Philadelphia by State improvements. The railway projected thence to Lake Erie would, it was hoped, regain the trade and commercial position lost by Philadelphia on account of the Erie Canal. Very little was done toward building the road, however, until the time of the sale of the public works, when it was expected that the road would be finished promptly. The plans were never to be realized. A small amount of work seems to have been done, and in 1862 the right-of-way and charter privileges were leased by the Pennsylvania.

The development of transportation in Pennsylvania shows at first the double influence of Albany and Philadelphia on the coal companies, and then the rivalry between Philadelphia and New York for the trade of the West. Albany and New York had the Erie Canal, and in response to a demand for a similar avenue of commerce, Pennsylvania adopted and fostered her system of public works. They were unsuccessful, however, in serving the purpose for which they

¹Wilson, *History of the Pennsylvania Railroad Company*, I, 152.

were intended, because of the impossibility of continuous carriage. The cost of transshipment from rail to water and from water to rail rendered the price of transportation competitively prohibitive. It is sometimes asserted that the railways in Pennsylvania are typical instances of the subordination of the early roads to waterways. On the contrary, the railroads and waterways grew up closely united as integral parts of the system which developed in response to the demands of the market cities for the exploitation of their back country and ultimately of the farther west.

The "coal roads" present a group which, at a time when no "railroads" in the modern sense existed, were recognized as playing an important part in the economy of the State. As late as 1832 there was no road in the State using iron rails, but roads using wooden rails existed as early as 1816.¹ These roads were all built with the object of uniting the eastern or anthracite fields with the canals or rivers. Since it was obviously impossible to build canals to the mines, roads operated by horse-power or cables on the inclined planes were built. These later became the bases for the important group of "coal roads," such as the Lackawanna, the Lehigh, and the Delaware and Hudson. The trend of trade on these roads and canals was to New York rather than to Philadelphia, and the desire for the development of the public works to change the direction of traffic was stimulated by the prospect of Philadelphia losing all the trade of the northern part of the State.²

In 1827 the Lehigh Coal and Navigation Company built the Mauch Chunk and Summit Hill, from Mauch Chunk on the Lehigh Canal to their coal-mines. It was originally laid with a flat bar, 2 inches by 0.5 inch. The loaded cars descended by gravity and were drawn back by mules.³ The Carbondale and Honesdale, extending from the Delaware and Hudson Canal to the Northern and Lackawanna coal-fields, was opened in 1829, and is by some claimed as one of the three "first" roads in the United States, a claim hardly justified in the light of the modern sense of the word "railroad." It was a gravity road, 16½ miles long, laid with an ordinary flat wooden rail. The distance was made up of several long and short planes, using cables, stationary engines, and gravity as required. Other roads of this same type were the Mill Creek and Mine Hill, chartered in 1828 and completed in 1829, from Palo Alto on the Schuylkill Canal to the coal-mines, 4 miles distant; the Schuylkill Valley, from Port Carbon to Tuscarora, 9.23 miles; and the Union Canal Company's road, both completed in 1830. In 1831 two others were built, the Mine Hill and Schuylkill Haven, 13½ miles, and the Mount Carbon Road, 7 miles.

¹Wood, *Practical Treatise on Railroads* (Am. ed., 1832), 438.

²Jones, *Economic History of the Anthracite Tidewater Canals*, 96.

³Poor, *History of the Canals and Railroads of the United States*, I, 415.

As has been noted, the first railroad in Pennsylvania, using the term "railroad" in the usual sense, was the Philadelphia, Germantown and Norristown, chartered in February 1831, and authorized to construct a railway from Philadelphia to Norristown, with a branch to Germantown. It was opened to Germantown, 7 miles, and a train run over it, in June 1832. In 1835 the road was completed to Norristown, 17 miles. The Philadelphia and Trenton—the Pennsylvania end of the line between Philadelphia and New York—was chartered in 1832 and was authorized to construct a road from Philadelphia along the Delaware to a point opposite Trenton and to purchase the turnpike between Trenton and New Brunswick. It was completed and opened to traffic in 1834. In 1836–37 the company became a part of the Camden and Amboy. Three coal roads were opened in the years 1832 and 1833, namely, the Little Schuylkill, 20 miles long, a combined mining and transportation venture; the Room Run, 5 miles long; and the Lykens Valley, 15½ miles. The latter two belonged to the Lehigh Valley system. In addition to the Philadelphia and Trenton, 127 miles of road were opened for traffic in 1834. The Westchester Railway was a branch of the Philadelphia and Columbia, but was built and operated by a private company.¹ It was for a long time run by horse-power over its 10 miles of route. This road connected with the Philadelphia and Columbia at a point about 22 miles from the former city, from which junction it ran to Westchester.

The next road was the Beaver Meadow, 20½ miles long. It was chartered in 1830, but its construction was not begun until 1835; it was finished in 1836. This road was part of the Lehigh Valley system, and was employed for many years exclusively as a coal road. In 1860 it owned only 2 passenger and 4 freight and baggage cars, although the number of its coal cars exceeded a thousand. It ran between the Lehigh Canal and the Beaver Meadow coal-fields and was a very productive road.

Four roads were opened or begun in 1837. Of these, the Harrisburg branch of the Philadelphia and Columbia was the most important. It was chartered June 9, 1832, under the name of the Portsmouth, Mount Joy and Lancaster, and in 1835 a supplementary act authorized it to extend its line to Harrisburg. Construction was begun in 1834 and the whole line completed in 1838. The first cost of the road was \$859,537. It was 36 miles long, from Lancaster to Harrisburg. In 1842 the company was forced to relay the road with heavy rails and to build a second track.² This work was finished in 1849, and in the same year the road was leased to the Pennsylvania. The second of the four roads was the Cumberland Valley Railroad, chartered in 1831, begun in 1836, and opened in December 1837. It extended from Chambers-

¹Hazard, *United States Commercial and Statistical Register*, III, 19, July 1840.

²*Monthly Chronicle of Events*, III, 114–115, March 1842.

burg to the Susquehanna River, opposite Harrisburg, a distance of 49 miles. The company was empowered by the legislature in 1836 to build a bridge across the Susquehanna River at Harrisburg, and to extend the road 3 miles beyond, to meet the eastern terminus of the Pennsylvania Canal. The entire cost of the road, including the bridge, was \$423,215. The road was not at all remunerative, due partly to poor construction, and the company had to be reorganized in 1849, at which time the road was relaid with heavy iron rails and generally improved. It became more productive, but the earnings did not yield dividends on the common stock. The third road was the Strasburg Railroad, a short branch of the Philadelphia and Columbia, $4\frac{1}{4}$ miles long. The fourth road was the Sunbury and Erie, chartered in 1837 to a private company, but with certain restrictions that made it practically a part of the State system. The stock does not seem to have sold readily, and in spite of extensions of time and various privileges, the road was not actually begun until its absorption by the Pennsylvania.

Another link in the building of through lines was the Philadelphia, Wilmington and Baltimore, opened for business in 1838. This road differs essentially in character from the roads described in the immediately preceding paragraphs. Such roads as the Columbia and Harrisburg, on the one hand, and the coal roads on the other, were designed for purely local needs, with little reference to the large problems of communication. They linked up a larger countryside with the nearest metropolis, while such roads as the Philadelphia, Wilmington and Baltimore, among which are to be included the Camden and Amboy and the Philadelphia and Trenton, performed the part of inter-city carriers, linking city to city.

The road from Philadelphia to Wilmington and Baltimore was first put under construction by four companies: the Philadelphia and Delaware Counties, chartered in Pennsylvania in April 1831; the Wilmington and Susquehanna, chartered by Delaware January 18, 1832; the Maryland and Delaware; and the Baltimore and Port Deposit Railroad, chartered by Maryland in 1831.¹ Construction began about 1835. In 1836 the necessity for union became apparent, and on April 18, 1836, the Wilmington and Susquehanna and the Maryland and Delaware were merged into one under the title of the Wilmington and Susquehanna. Two months previously the Philadelphia and Delaware Counties had changed its name to the Philadelphia, Wilmington and Baltimore. In 1838 the three companies consolidated under the name of the Philadelphia, Wilmington and Baltimore. The road was opened over its whole length the same year. Its cost for the original 98 miles of road and equipment was \$5,900,000. A large amount of traffic, especially of passenger traffic, fell to the road as soon as it was opened.

¹Hazard, *United States Commercial and Statistical Register*, II, 166, March 1840; Poor, *History of the Railroads and Canals of the United States*, I, 487.

In 1839, 213,650 passengers were carried.¹ It paid 3 per cent in dividends from the very start.

The Franklin Railroad, a minor road opened in 1838, was chartered in Pennsylvania and Maryland in 1832, to construct a road in continuation of the Cumberland Valley Railroad from Chambersburg to the Maryland line and thence to Hagerstown, a total distance of 27 miles. It was of very light construction, with a thin, flat, bar-rail. It went into a receiver's hands shortly after it was opened, and was operated by this management with horse-power until 1852, when the State forbade its use on the ground that it was unsafe, and the road was sold, under an injunction that it must not be used again until relaid with heavy T-rail. The purchase price was \$18,000, but the new owners were unable to comply with the terms of the sale, and the road was resold and unused until its reconstruction in 1859. The York and Maryland, chartered in 1832, with a capital of \$500,000, was opened in 1838. It was built and wholly owned by the Baltimore and Susquehanna and the Pennsylvania. The Williamsport and Elmira, an unimportant and for a long time unprofitable road in the northern part of the State, was another effort, like the Corning and Blossburg, of about the same date, to unite the Albany and Philadelphia systems. The road was chartered in 1832, commenced in 1834, and finished from Williamsport to Ralston, 25 miles, in 1839. The remainder of the 78 miles to Elmira was not completed until 1854, after the sale and reorganization of the road in 1849.

The Philadelphia and Reading Road comes next in the growth of Pennsylvania roads. It was begun as an outlet for the Reading coal-fields. It was chartered April 4, 1833, with a capital of \$1,000,000, and with authority to double the amount of its capital if necessary. In 1837 authority was given to increase the capital to any amount necessary. A series of acts, begun in the same year, gave the company the right to build or acquire lateral roads to coal-mines and towns.² The road was begun in 1835, a year of comparative prosperity in railroad building. It was then planned to build a road only as far as Reading, leaving other companies to construct roads into the coal region. The next few years, however, with their series of financial disasters, made it necessary for the Reading to build its own spurs into the coal fields and also to take over under contract many branch roads already built.³ Incidentally the Reading added to the disuse of the Schuylkill Canal. This resulted in such sharp competition that in 1846 an agreement was entered into to prevent competitive conflicts.

The Reading was opened from Reading to Norristown July 16, 1838, and to Philadelphia in December 1839. At this time the actual cost of the road was stated to be \$2,500,000, with as much more necessary

¹*Monthly Chronicle of Events*, III, 111, March 1842.

²Philadelphia and Reading Railroad Company, *Annual Report*, 1850, p. 56. ³*Ibid.*, 1845, p. 4.

for the acquisition of adequate equipment. In 1842, lines were built to Pottsville and Mount Carbon and to the docks at Richmond, $3\frac{1}{2}$ miles above Philadelphia, where the trains were enabled to discharge their cargoes directly into the vessels at tidewater. The Mount Carbon Railroad had no mines of any consequence on its route, but connected at Palo Alto with several of the more important of the minor coal roads.

In 1850 the Reading was able, by its superior facilities, to allow the Schuylkill Navigation Company a differential of 30 cents per ton in order to eliminate competition, making the cost of anthracite coal from the Schuylkill region \$2.75 to \$3.30 per ton. In addition to its effect on the coal trade, the Reading from the very beginning was an aid to the city of Philadelphia in bringing in supplies of flour and produce regularly, especially in the winter, when the Philadelphians were partly shut off by the closing of the canals.¹ The cheapness of transportation over the road was considered phenomenal. In 1840 the Reading transported 300 tons of coal at a cost of 3.5 mills per ton-mile.² Two years later an interesting estimate of the cost of motive power placed it at 15 cents per ton per 100-mile run.³ In 1844 the road carried 421,958 long tons of coal, as against 218,711 in 1843. Gross receipts for 1843 were \$394,318.49, and \$597,613.05 in 1844. The tonnage nearly doubled the following year, after the opening up of several short laterals. The number of passengers carried increased from 56,554 to 66,000, decreasing from the latter figure to 63,719 in 1845, and increasing to 88,641 in 1846.⁴ In 1847 the Reading was called the great freight road of the United States. It carried in that year more freight than the Erie Canal, with its 610 miles including branches, and at a much lower rate—a fact that the promoters of railroads and opponents of canals were not slow to appreciate.⁵ Fares in 1848 averaged about 3 cents per mile.⁶ Before the construction of the Reading the price of anthracite in New York had risen as high as \$14 per ton; a few years afterward it retailed for from \$5.50 to \$6.⁷ This seemed so remarkable that as early as 1842 a committee from the Philadelphia Board of Trade was appointed to confer with the State canal commissioners on the urgent necessity of a reduction in the cost of transportation on the public works.

From 1842 to 1849 no roads of importance were opened in Pennsylvania. Several of the roads already in existence were extended, but the greater part of the State's energy was expended in promoting a road to Pittsburgh and the farther West. Philadelphia was not well pleased with the efforts to obtain a through route to the West by means

¹Hazard, *United States Commercial and Statistical Register*, II, 79, Jan. 1840.

²Niles' Register, LVIII, 198, May 30, 1840.

³Hunt's Merchants' Magazine, XI, 544, Dec. 1844.

⁴Philadelphia and Reading Railroad Company, *Annual Reports*, 1850, p. 4; 1854.

⁵Hunt's Merchants' Magazine, XVI, 415-417, April 1847; XVII, 309, Sept. 1847.

⁶Ibid., XIX, 214, Aug. 1848.

⁷DeBow's Commercial Review, V, 35-36, Jan. 1848.

of the Cumberland Valley Railroad, feeling that it diverted traffic from that city to Baltimore.¹ The western part of the State, however, preferred the Baltimore outlet, as being easier of access by means of the already developed system of the Susquehanna and its canals. The northern part of the State preferred connection with New York, which it was anticipating through the building of the Erie Railroad. Pittsburgh was extremely anxious for an eastward outlet, and in 1846 was negotiating a road to connect with the Baltimore and Ohio by means of the old charter to the Pittsburgh and Connellsville Railroad, granted in 1837 and revived in 1843.² With all of these threatened defections, Philadelphia felt the urgent necessity for organizing and supporting some company that would build a line over the mountains. Accordingly a charter was secured, and construction begun, in the hope of stopping the work on the Baltimore road.

The Pennsylvania Railroad Company was incorporated April 13, 1846, with authority to construct a road from Harrisburg to Pittsburgh, and branches to Erie, Blairsville, Uniontown, and to any parts of the counties through which the main road might pass. The capital authorized was \$10,000,000, which amount was by subsequent acts increased to \$14,000,000, and in consideration of the privileges granted and for the protection of the public works, the company was to pay the State 3 mills for every ton of freight carried 1 mile. The State also reserved to itself the right to purchase the road at the end of 20 years at cost, with 8 per cent interest thereon, deducting the profits of the company. The first measure the company took after its organization seems to have been to put a stop to the building operations of the Baltimore and Ohio.³ This was an act made necessary not only to prevent rivalry, but also in order to put stock subscriptions on a firmer basis. Subscriptions to the amount of \$3,000,000 were secured, largely, it is said, by house-to-house canvass. Even single shares were solicited. Subscription to the stock was considered by many as a patriotic endeavor to retain and extend a trade which legitimately belonged to Philadelphia and which was about to be wrested from her grasp by her more enterprising rivals. Out of 2,600 shares thus subscribed, 1,800 were taken in subscriptions for 5 or less than 5 shares each. This wide distribution of the stock indicates the popular interest in the enterprise. The legal requirements of \$1,000,000 paid into the company's treasury and 15 miles of road under construction at both ends had to be met before July 30, 1847. Two installments were therefore called in May and July 1847. The first payments amounted to \$900,000. The deficiency still existing was made up by volunteers among the stockholders in anticipation of the

¹*Niles' Register*, LXI, 352, Jan. 29, 1842.

²*Ibid.*, LXX, 213-214, June 6, 1846.

³Pennsylvania Railroad Company, *Annual Report*, 1847, p. 6.

fourth payment, and contracts were quickly let for the required construction. On August 2 the governor of Pennsylvania issued his proclamation, declaring the law giving the Baltimore and Ohio the right of way through Pennsylvania null and void. This had the effect of putting the Pennsylvania Railroad's credit very high, and increased its ability to secure subscriptions.

With the exception of the 15 miles required by law, the road was built from the eastern terminus westward. The first section, from Harrisburg to Lewistown, $60\frac{2}{3}$ miles, was opened in September 1849; 72 miles more were opened in December of the same year, and the whole Eastern Division to Hollidaysburg in September 1850. At this point it used the Allegheny Portage Railroad until its own Mountain Division was completed in 1854. The first section of the Western Division was finished in 1851, and the whole route in December 1852. A number of branches were also put under construction, and from Columbia the Pennsylvania ran over the tracks of the State railway until its purchase of the latter. In 1848 it took over the Harrisburg and Lancaster, never until then a profitable road.

An interesting item regarding the Pennsylvania in its early days is found in the split which occurred in the board of directors in 1849 over the salary of the president. He was paid at the time \$5,000. One faction, however, argued that this was far too much, and that, unless he could also act as the company's engineer and take charge of construction, he should be paid no more than \$2,500. The more liberal party prevailed.

In 1853 an act was passed authorizing the company to subscribe capital or guarantee the bonds of other companies to the extent of 15 per cent of its own paid-up capital. Under this authority the company exchanged stocks with the Cincinnati and Marietta Company to the amount of \$650,000; with the Maysville and Big Sandy to the amount of \$100,000; with the Springfield, Mount Vernon and Pittsburgh to the amount of \$100,000; with the Ohio and Indiana and the Ohio and Pennsylvania to the amount of \$600,000. These, while in some cases worthless, were a part of the policy adopted by the road from its earliest years to secure the trade of the Ohio Valley. Two other roads were in active pursuit of the same object—the Baltimore and Ohio and the New York roads.¹

In 1853 the Pennsylvania extended its connections to Indianapolis, Madison, Terre Haute, Evansville, Crawfordsville, and Lafayette, and was urging forward the connection with Cincinnati over the Cincinnati and Marietta. It seems to have been among the first to realize the importance of a uniform gage.² The company continued a very able and enlightened policy of developing feeder lines throughout Indiana and Ohio.

¹Pennsylvania Railroad Company, *Annual Report*, 1848, pp. 9, 10. ²*Ibid.*, 1854, pp. 17, 181.

MARYLAND.

The railroad history of Maryland centers largely about its first and greatest road, the Baltimore and Ohio. Two lines of stimuli appear: first, the old effort to cross the Alleghenies up the Potomac and the interlacing valleys to the Ohio, and second, the commercial ambitions of Baltimore and the growing importance of the northern ports. Baltimore's shipping was declining rapidly, and new sources of trade were becoming necessary. The Baltimore and Ohio was incorporated in Maryland on February 28 and in Virginia on March 8, 1827, with authority to construct a railroad from Baltimore to some suitable point on the Ohio River, with a capital of \$5,000,000 and the right of organizing on the subscription of one-fifth of the amount. By the charter, 10,000 shares were reserved to the State of Maryland and 5,000 to the city of Baltimore, for one year, after which, if not subscribed by the State or city, respectively, the shares might be sold. The State and city were allowed to appoint one director for every 2,500 shares held, but were not permitted to vote their stock at shareholders' elections.

The charter further contemplated either a public highway, upon which vehicles privately owned might be placed, if licensed by the company, or a railway owned and operated by the Baltimore and Ohio. The company was limited in its charges to 1 cent per ton-mile for toll and 3 cents per ton-mile for transportation on east-bound traffic and 3 cents for tolls per ton-mile and the same for transportation on west-bound traffic.¹ Successive acts provided for payment of the State's subscription by borrowing on the State's credit, and enlarged the powers of the company. In 1830 the road from Baltimore to Washington was authorized. By an act of the same year the legislature very definitely retained the power to regulate or restrict any charges or rates deemed unreasonable or injurious in their operation,² and minute regulations were established in certain classes of cases.³

The second annual report of the directors, in 1828, showed the first section all under contract and in process of construction. It was estimated that the first 12 miles would cost an average amount of \$17,000 per mile, exclusive of the rails, owing to heavy cutting, in order to avoid the use of an inclined plane. The construction of the road was in large part determined by the expectation that a vast preponderance of the traffic would be east-bound. The road was begun in a most impressive manner. Ground was broken July 4, 1828, by Charles Carroll of Carrollton, in the presence of "assembled thousands." The State of Maryland took up \$500,000 par value of the stock set apart for it, and Baltimore had taken its whole subscription of \$500,000 by the end of 1828. Congress also was appealed to

¹Baltimore and Ohio Railroad, *Charter*.

²Maryland, *Laws*, 1830, chap. 117, p. 123.

³*Ibid.*, chap. 158, pp. 164-169.

for aid, but unsuccessfully, so far as finances were concerned. Several Government engineers, however, were detailed to assist in laying out the road. At this early period rails of stone were contemplated in some sections, of wood in others, in some cases surmounted by an iron plate-rail.¹ Some of the materials were given the company by citizens along the route. There is no evidence in the reports of any motive-power in view save horses or gravity. A few experiments seem to have been made in the use of sails, and careful computations were cited to show the maximum load per horse that might be carried at a given rate of ascent.²

The magnitude of the task of the Baltimore and Ohio Railroad Company can hardly be appreciated at the present day. There was no experience of others by which to be guided. The engineers literally did not know what they were about, but had to feel their way in the face of a public liberal in its criticism of their operations—now wildly enthusiastic, now very cold and lethargic. Schemes of various sorts had to be tried and cast aside. In addition, the company met sharp opposition from the subscribers to the Chesapeake and Ohio Canal Company and the Potomac Company, who conceived that their chartered privileges were to be infringed, although the former company was at the time unorganized. The Potomac Company through its directors obtained an injunction restraining the railroad from acquiring title to lands on its proposed route. In the case of the Chesapeake and Ohio Canal the railroad obtained an injunction restraining the canal company from taking any steps in the location or construction of a canal. Following this, the Potomac Company secured an injunction forbidding all operations of the railroad in Frederick County—which was, however, withdrawn.³ The litigation, of course, stopped the building of the road, save in the vicinity of Baltimore. A commission of engineers was sent to England in 1829 to investigate the building of English railroads and the motive-power used thereon.

The first division of the road was opened in 1830, on the twenty-second of May. It was about 13 miles long and amounted to practically a suburban line for Baltimore. It was not in real running order until the middle of the following month of June, and from then until September was used only for passenger traffic. When opened for goods, it was not able to convey one-tenth of the amount offered. From June to October 1 the receipts amounted to \$20,000 over the single track in use. A note in *Niles' Register* for August 1830 indicates that the chief use of this railway was for pleasure purposes.⁴ The novelty attracted thousands of passengers, who enjoyed the ride on the new invention. The tracks on this section were at this time of stone.

In this year the possible use of locomotives is first mentioned. The problem of the use of locomotives on the sharp grades and curves

¹Baltimore and Ohio Railroad, *Annual Report*, 1828, pp. 9, 12, 20.

²*Ibid.*, p. 16.

³*Ibid.*, 1829, pp. 8-9.

⁴*Niles' Register*, XXXIX, 12, Aug. 28, 1830.

of the road had at first been considered insurmountable, but, when it was found feasible, arrangements were made for the purchase of two from an English firm at a cost of £1,000 each. They were considered superior to stationary power on an inclined plane because, while the initial cost and maintenance cost of the inclined plane were constant without reference to the amount of traffic, the locomotive, "like horses, can be adapted to the wants of the trade, through all of its successive gradations of increase, from the commencement."¹ But it was feared that, on a very steep grade, the amount of friction would not be sufficient to keep the engine and car on the track.

The difficulty between the railroad and the canal company was ended in this year by a joint commission to consider the routes of both and relocate either in order to avoid the clash of interests. Eventually the two were practically consolidated and constructed jointly.

The road was open to the city of Frederick, 70 miles, in 1831. This city was so anxious to secure the benefits of the road that it gave the company the land for its station, and in addition land for the right-of-way was granted by private citizens. The following is an interesting item from the report of 1831:

"The depot at Frederick is so situated as to secure from it an easy communication by lateral railways into all parts of that city; the company will therefore be enabled to receive produce or deliver freight upon any street where the inhabitants may extend the railway, and open suitable warehouses for the accommodation of the trade."

In Baltimore also some nine routes were discussed for "lateral railways" through the city streets. The discussions over the functions of the road are interesting, as showing the conceptions of various kinds which prevailed. No incongruity was seen between the scheme for a species of package delivery and the dreams of through commerce "linking the States"—a favorite phrase. The motive-power on these "lateral railways" was to be that of horses, since "stationary power with its necessary appendages of planes, ropes, chains, and sheeves, can not be admitted into a public street."² As to the use of an engine it was stated:

"It would not be prudent to establish a higher velocity than the walk of a horse, to wit, about 2½ miles per hour, which, fortunately for the case before us, is also the velocity at which his useful effect will be a maximum. . . . From the absolute necessity of many branches being made to radiate from a railway, on which the tonnage and travel will be very great and various, to and into a great emporium such as the city is destined to become, it will be found expedient to make the principal routes of departure commence as soon as practicable, in order to avoid confusion and detention."

In the same year the road from Baltimore to Washington was surveyed and contracts let for its construction. The editor of *Niles'*

¹Baltimore and Ohio Railroad, *Annual Report*, 1830, p. 36.

²*Ibid.*, 1831, p. 82.

Register argued that the city of Baltimore could well afford to undertake the building of this road herself, on account of the profitable business that it would bring.¹ The city of Frederick felt the stimulus of the railway very rapidly, and as a reflection of this the city of Winchester began a project for a railway to Harper's Ferry, at which point the Baltimore and Ohio would connect.

In August 1831 the road made its first successful attempt at using a locomotive.² In addition to the engines ordered from England, prizes were offered to stimulate the ingenuity of American mechanics, and a successful engine, the *Atlantic*, was put into service on the road. Both in respect to speed and economy of operation it far exceeded expectations and aroused great interest on the part of the public.³ The progress of the road towards the Potomac was greatly impeded by the continued controversy with the canal company. The first decisions of the court were against the railroad company, invalidating its title to lands it had acquired along the Potomac and defeating, so far as possible, the efforts of the road to reach Point of Rocks on the Potomac, the point of dispute between the two.

It must be remembered that the Potomac Company, perhaps a more active rival than the Chesapeake and Ohio Canal Company, was an unorganized company, existing under an old charter, and was supposed to be practically out of existence when the railroad was chartered. The Potomac Company had never organized nor commenced any improvements on the river. The railroad wished to push its construction to Harper's Ferry, there to connect with the upper Potomac and Shenandoah Valleys. The Virginia towns seem to have welcomed the choice of markets they would thus obtain. It is said that the first train of cars which reached Baltimore from the Point of Rocks April 20, 1832, carried between 300 and 400 barrels of flour.⁴

In 1833 the compromise between the rival interests was effected. The canal company undertook the building of the railroad between the Point of Rocks and Harper's Ferry for the sum of \$266,000, over the right of way along the Potomac River which had been in dispute.⁵ There seems to have been some question whether this arrangement was not unduly to the advantage of the canal company; but on the other hand, the interests of the Baltimore market and hence of the road lay clearly in reaching Harper's Ferry, with its rich tributary valleys, at almost any cost. It was expected that the road would be built within two years, and that speedily thereafter a road would be completed to Winchester and Staunton, thus opening the whole coveted Shenandoah Valley of Virginia to the Baltimore market and ultimately also the

¹*Niles' Register*, XL, 57, March 26, 1831.

²Baltimore and Ohio Railroad, *Annual Report*, 1832, pp. 108-109.

³*Niles' Register*, XL, 291, June 25, 1831; XLI, 321, Dec. 31, 1831; 347-349, Jan. 7, 1832.

⁴*Ibid.*, XLII, 153, April 28, 1832.

⁵Baltimore and Ohio Railroad, *Annual Report*, 1833, p. 13.

upper Tennessee. That much of the development in this direction was slow and gave way in interest to the connection with the Ohio is probably due to the rivalry of Richmond and to the lack of abundant local capital.

Meanwhile, the attention of the railroad company itself was focused upon the road to Washington, delayed for a time by some uncertainty over the stock. The reports of the Baltimore and Ohio for these years give a delightfully quaint insight into the human element in railroad building. There is the old Quaker chief engineer, Jonathan Knight, with his almost militant reports and firm convictions on the subject of the location and construction of roads, all couched in the gentle language of the Friends; the difficulties of locomotives equipped with English horizontal boilers; the problem of "burthen" cars, a source of much agitation and sundry reports, since the introduction of steam made it impossible to carry articles on top of the cars. Descriptions of the operation of trains arouse a species of terror in imagining the feelings of passengers in these light coaches, literally "yanked along" over a track on granite sills, at a rate of 25 miles an hour, and the engineers claimed to make 40 at times.

The line from the Point of Rocks to Harper's Ferry was completed and formally opened for use December 1, 1834, and was followed by an immediate increase in business, exceeding, so says the Report, anticipations to such an extent as to cause the company some difficulty in taking care of the business offered. A connection with the Winchester and Potomac was prepared for such time as the latter company's trains should be running, by means of a bridge across the Potomac, capable of permitting the passage of trains. The increase of business created by the presence of the road surprised the directors by not being confined to the termini, but instead coming from the whole countryside. In 1835 the company made the discovery that the stone sills were the worst possible construction used on the railroad and returned to their earliest device, the wooden string-piece and sleeper.

The Washington branch was opened August 25, 1835. Trains between the two cities occupied at first about 2 hours and 10 minutes running time. This road drew from Virginia and the Chesapeake Bay region to Baltimore, as it proved an easier method of access than that by the older route up the bay. At about the same time plans were made for a road from Chambersburg to Baltimore, to draw the trade of that region to the latter city. Still stopped by the rivalry of the canal from proceeding up the Potomac Valley to the Ohio, the city and the railroad, mutually aiding each other, reached out into all the available country to the north, east, and northwest. From Baltimore to Port Deposit a road was in process of construction and finished as far as Havre de Grace in 1835, and the road to Wilmington was also nearly finished. For a through route tributary to their city, Baltimore capi-

talists were still looking up the Valley of Virginia, into the Tennessee Valley and to Georgia, and eventually to New Orleans.

Connections to the West were waiting on the Chesapeake and Ohio Canal to Cumberland. When this point was reached the company looked to the building of a railroad on to Wheeling, across the mountains. The State, still a believer in canals, appropriated \$2,000,000 for the benefit of the canal, but did not seem so well inclined towards the railroad. The State of Pennsylvania required that, if the Baltimore and Ohio entered Pennsylvania, it must build a branch to Pittsburgh, a requirement later revoked in favor of the Pennsylvania Railroad. Both Wheeling and Pittsburgh were very anxious for the connection and willing to subscribe generously. The surveys were made and the practicability of the road, without inclined planes, was made certain. Private capital, however, was wary of the undertaking, so long as the joint railroad-canal route continued. It was vitally necessary to break this connection and to secure a through road to the Ohio Valley. The stock was very low, and not likely to rise until through connections, with their certainty of increasing business, were in sight.¹

In 1836 the Winchester Road was opened. It did not at once result in the vast increase of business that had been confidently looked for. The true development of the road lay to the west, and activities of 1836 were turned towards developing and perfecting this connection. Surveys to Pittsburgh and Wheeling were pushed, and plans made for replacing the planes at Parr's Ridge by ordinary track, since locomotive engines had improved so rapidly in their four years of use as to be capable of making the grade successfully.² But the State, as represented in its legislature, was not yet convinced. A vigorous campaign of education was therefore carried on, from Wheeling and Brownsville on the one hand and Baltimore on the other, and aided also by Pittsburgh.

The whole influence and weight of *Niles' Register* was thrown into the fight for the railroad; and the *Wheeling Gazette* and other influential papers joined in the cry that "our railroad must go on." They had little or no faith in the canal. Baltimore was a "natural deposit for the business of the West," demonstrably nearer the producing sections of the time than either New York or Philadelphia, and since the mountains were shown to be passable by the new engines, the "great West" could be reached and could bring its wares to market much more easily and cheaply by way of Baltimore. As to passenger traffic, the success of the line to Washington was so positive that great dreams of speed were entertained—for instance, 56 hours from Cleveland to

¹*Niles' Register*, XLVII, 259, Dec. 20, 1834; Baltimore and Ohio Railroad, *Annual Report*, 1835, pp. 17-19.

²Baltimore and Ohio Railroad, *Annual Report*, 1836, p. 3.

New York.¹ A few argued that the railroad had been a source of injury to the farmers of lower Maryland by allowing corn brought from a distance to compete successfully in the city markets. Corn from distant lands selling for \$10 an acre fetched the same price as corn from near-by farms worth \$100 an acre. So the latter lost their advantage of position and the value of their land was lowered. An economic iconoclast announced that this was a very good thing. As in other cases, the horse-breeders were strenuously opposed to the building of the road.²

A convention was held at Brownsville, November 25, 1835. Delegates were present from Baltimore and other towns along the proposed route. Many of the most distinguished men of the country, says the editor of *Niles' Register*, met in the Episcopal Church of Brownsville. There were over 150 delegates in attendance, representing the Baltimore and Ohio Railroad and the Chesapeake and Ohio Canal, as well as various towns interested. To this convention was submitted a report of the engineers who had made the surveys of all the routes practicable by which the road might be carried across the mountains. Numerous committees were appointed, to memorialize the Congress of the United States, the legislatures of Ohio and Maryland, the city councils of Baltimore, Wheeling, and Pittsburgh, and the Baltimore and Ohio Railroad. Others were to investigate the questions of cost and time required for completion, and a permanent committee was appointed to direct the whole propaganda, which seems to have been very well organized.³

The Maryland legislature, which met the following month, developed powerful opposition. The railroad scheme formed part of a bill for general internal improvements and was defeated. The appeal to the city of Baltimore met with a greater measure of success. It was resolved to subscribe \$3,000,000 to the stock of the company whenever the legal difficulties preventing an unbroken line of road from Harper's Ferry to the Ohio should be removed.⁴ Early in 1836 another railroad convention met in Baltimore, at which delegates were present from Wheeling, Pittsburgh, and other towns, which seems to have still further increased the popular demand.

The legislature met in May, in a special session to consider internal improvements. The ways and means committee recommended appropriations of \$8,000,000: \$3,000,000 each to the railroad and canal, \$1,000,000 to make a railroad on the Eastern Shore, and the remainder to extend the Chesapeake and Ohio Canal to Baltimore.⁵ It was passed on June 3, 1836. In addition to the subscription of the State, the law released the company from the restrictions on its westward

¹*Niles' Register*, XLIX, 17, Sept. 12, 1835; 101, Oct. 17, 1835; 241, Dec. 12, 1835.

²*Ibid.*, XLIX, 127, Oct. 24, 1835.

³*Ibid.*, 237-238, Dec. 5, 1835.

⁴*Ibid.*, L, 34, March 19, 1836; Baltimore and Ohio Railroad, *Annual Report*, 1836, p. 5.

⁵*Niles' Register*, L, 18, March 12, 1836; 217, May 28, 1836.

construction, and by so doing enabled the company to receive the subscription of the city of Baltimore. One stipulation remained, that the act should be accepted by both the railroad and canal companies. The latter was finally persuaded to accept the law, by certain arrangements and agreements entered into between the two companies, with such success that on September 23, 1836, the subscription of the State was received, and 4 days later that of the city of Baltimore, thus adding at once \$6,000,000 to the working capital of the company. On the State subscription, the company was pledged to pay 6 per cent interest, beginning 3 years after the date of its receipt.

The road encountered a few minor difficulties over tolls on the Maryland and Pennsylvania canals, which threatened to injure her. The winter of 1835-36 was a notable one in the annals of the road for its extraordinary severity. The directors state that at times the ice on the tracks was so thick that the locomotives could not be used and horses had to be employed in order to carry on the work of transportation. The expenses of the road were increased some \$14,000. No trips were lost, however, although trips were not infrequently lost on the more northern roads at the time. The road sent delegates to the railroad convention at Knoxville, July 4, 1836, when the Cincinnati and Charleston Road was being actively promoted by the latter city.

Unfortunately, just as the road seemed in a prosperous position to realize its ambitions, the country was struck with the panic of 1837, and railroad stocks, even secured by the credit of State and city, were unsalable. Revenues fell off disastrously, and instead of declaring a dividend, as it had expected to do, the company was forced to call for a further installment of subscriptions on the original stock. The company could manage to keep up only the most necessary repairs and the surveys for the new part of the road which had been begun. Fortunately, the same act which freed it from the canal company had extended the time within which the road might be completed to 1843.

In 1838 the road received a subscription of \$300,000 from the State of Virginia. Nevertheless it was financially embarrassed, and at the same time a great deal of reconstruction and repair work was necessary. The surveys west of Cumberland had to be stopped and the work was limited to the section from Harper's Ferry to Cumberland. Here rights-of-way were obtained and some of the contracts were let for the construction. It had been found impossible to sell the bonds, except at a serious loss. They were, therefore, withdrawn from the market, and the expedient was adopted of issuing them in payment to the contractors. Between 1837 and 1841 nearly the whole road was relaid with heavy T-rail and the inclined planes at Parr's Ridge were removed.

In 1841 the road paid a dividend of 2 per cent on its augmented capital of \$6,500,000, a result of the use of the Baltimore City stock

proceeds to pay the cost of building the Cumberland Division.¹ The latter part of the same year, however, was marked by the failure of the city to continue its payments. The road was nevertheless opened up as far as Cumberland in 1842. Beyond this, however, it seemed then impossible to go, a condition which involved the loss of Virginia's subscription and of the promised aid from Wheeling and Pittsburgh. The profitableness of the Washington branch, which in the first six and one-half years of its existence repaid one-fourth of the \$500,000 invested by the State, showed what a properly located road could yield, and further urged on the company in its attempts to push beyond the mountains. Moreover, in 1842 the Chesapeake and Ohio Canal Company was in debt over a million dollars,² and a bill in the legislature to aid the canal further, after many vicissitudes, met defeat. It is doubtful whether it would have been of much use had it passed, as the State-secured scrip of the Baltimore and Ohio was down to 50 cents on the dollar.³ Work on the canal came to a standstill.

In 1843 it was proposed to foreclose upon the mortgages held by the State and advertise the canal for sale, provided \$500,000 could be obtained for it. The total liabilities of the company, in addition to the \$2,000,000 loan from the State, were \$1,517,714.83. The estimated cost of completing the canal was \$1,545,000.⁴ Foreclosure was not resorted to, however, and the canal company managed to reduce its indebtedness somewhat in 1843, while still praying for aid from the State. In July of the same year prospects began to be brighter with the easing of the general financial stringency.

The reports of the Baltimore and Ohio, from 1842 to 1846, give an excellent summary of the economic situation. The railroad, if extended to Wheeling and Pittsburgh, would undeniably afford the shortest and cheapest route from the Ohio Valley to the seaboard—superior to the route to Philadelphia, owing to the difficulties of navigation on the Delaware. The city most interested was Baltimore, whose liberal contributions were, in fact, actuated less by thoughts of dividends than by the prospect of sharing in the western trade. This trade consisted chiefly of goods brought to Baltimore, not for that city's consumption, but for distribution beyond. These goods coming in wagons to Cumberland might choose their route on from that point and might be expected to choose the cheapest. Unless the railroad charges were placed below the point of profit, Baltimore would lose the trade. Such competition would only be defeated by extending the railroad to the Ohio River, in which case there would be but one change from the steamboat to the railroad, and little probability of transshipment at Cumberland.

¹*Niles' Register*, LVII, 167, Nov. 9, 1839; 291, Jan. 4, 1840; LIX, 128, Oct. 24, 1840; 293, Jan. 9, 1841; LXI, 72, Oct. 2, 1841.

²*Ibid.*, LXI, 352, Jan. 29, 1842.

³*Ibid.*, LXII, 32, March 12, 1842; 52, March 26, 1842.

⁴*Ibid.*, LXIII, 277, Dec. 31, 1842; 306, Jan. 14, 1843.

Before and during the War of 1812, the commercial and general prosperity of Baltimore advanced with great rapidity and afterwards seemed as suddenly arrested. The system of turnpike roads which centered on the city enabled it to compete successfully for the Ohio trade, but the introduction of steamboats on the Ohio and Mississippi Rivers had diverted the trade to New Orleans. The interest of Baltimore lay in insuring cheap transportation by steam from New Orleans. A first step was to enter the Allegheny coal regions and to aid in their development by furnishing cheap transportation to market. The Baltimore and Ohio management seems to have foreseen from an early date the possibilities lying in the carrying trade of coal and iron mines, and to have deliberately set about to develop mining interests in places where no such business existed before the railroad was built.

The combination of the coal and iron interests with the railroad interests is thus seen in its inception in the early history of the Baltimore and Ohio. The railroad company urged the capitalists interested in the iron and coal mines to employ part of their capital in assisting the railway. Baltimore had assumed its fair share of the burden by contributing funds for the road towards Cumberland, and it was now the turn of the interests farther west to come in. It was estimated that the road, from Cumberland to Wheeling, would cost \$4,600,000, and the branch to Pittsburgh \$1,322,634, making a total of \$5,922,634. The resources available for this work were of doubtful or contingent value. The company held in reserve \$3,175,000 of the State's subscription, which was, however, practically worthless. There was also a subscription of \$1,358,000 authorized by the State of Virginia, contingent on the building of the road through certain sections of that State. Wheeling had promised \$1,000,000, and it was certain that she would fulfill this promise rather than surrender all her hopes to Pittsburgh. It was equally certain that Pittsburgh would subscribe a like amount.

Succeeding reports keep reiterating these arguments. In 1843 the road suffered from an unexpected development of competition, namely, competition of a line of boats on the Chesapeake from Baltimore and of a line of stages from Washington to Baltimore. The company was still under the necessity of changing its motive-power from steam to horses in order to enter the city of Washington, and with some qualification similar regulations were enforced at Baltimore. From these and other causes the receipts from passengers fell off 17 per cent. Application was made through the governor of Maryland for permission to make a temporary reduction in charges to meet the new competition, but this was denied.

Meanwhile, Pennsylvania and New York were both developing their routes to the West and were likely, by reaching the Ohio Valley first, to take from Baltimore her natural advantage of position. A joint

rate of 2 cents per ton-mile was arranged at this time with the canal company on coal from Cumberland to Washington. This had been the established rate on coal, without regard to time, distance, or quantity, and the object of the canal company in proposing the new arrangement had been to induce the railroad company to build sidings at Dam No. 6, the upper terminus of the canal, and to engage in the transportation of coal jointly with the canal at the same rate. If in the opinion of the canal company a less charge than 2 cents per ton-mile had been necessary for the success of the arrangement, it could have made a lower rate; and if the railroad company could have relied upon an amount of trade equal to 50,000 tons per annum it would have been willing to increase its machinery according to the growth and requirements of the coal trade. The canal company proposed the charge of 2 cents as a rate advantageous to both companies and as being low enough to insure the transportation of coal upon the railroad to Dam No. 6 in sufficient quantities to meet the growing market demand. Toll on coal by the canal from Dam No. 6 to Georgetown being one-half-cent per ton per mile, and the freight charge also one-half cent per ton-mile, the president of the canal company believed that 2 cents per ton-mile on the railroad, if maintained for a period of only two years, would, by enabling dealers to sell at a profit, serve to develop the trade.

The experiment proved a failure, however. The company did not get enough business to pay for the improvements necessary to handle it. There was but one company developing its property in the region of Cumberland, and the older and better developed anthracite trade seemed to be supplying the whole need of the market. On the whole, the Baltimore and Ohio was but slowly coming to a belief in the feasibility of railroads for the carriage of heavy goods whose value was so small in proportion to their weight and bulk as to admit of but low charges. A long series of investigations was made as to the possible increase of business, under various traffic conditions and rates, and the conclusion was reached that until the demand came from the outside the railroad could do nothing.

In January 1844, the president of the Maryland and New York Iron and Coal Company informed the board of directors of the Baltimore and Ohio that he had obtained the necessary capital to construct a railway from his company's mines to Cumberland, and was anxious to proceed with the work if the charges for the transportation of iron and coal from the mines to Baltimore could be fixed at such a rate as would warrant him in adopting the Baltimore and Ohio road for the transportation of his product. He offered a contract for that purpose, to run five years after the completion of his road, and agreed to furnish freight of coal, pig-iron, fire-brick, and castings and other manufactures of iron, the principal freight being coal, in quantities of 175

tons per day for 300 days in the year. The construction of the railway from the mines to Cumberland depended upon the terms offered for acceptance by the railroad. The latter agreed to furnish cars and motive-power from the mines to the iron company's shipping-point in Baltimore at $1\frac{1}{3}$ cents per ton-mile for the distance of 188 miles, with an addition of 10 cents per ton for transportation through the streets of Baltimore, the cars to be loaded and unloaded at the shipper's expense. When such articles were required to be carried in "house cars," 1 cent per ton-mile was to be added. These terms were accepted by the Maryland and New York Company, which proceeded then to construct its railway.

The data upon which the company's estimates of the cost of transportation were based are interesting. The traffic in coal was supposed to be a distinct branch of transportation separate from and wholly independent of, the general trade and traffic of the road, and therefore not properly chargeable with the existing and fixed expenses incident to the general miscellaneous business, which would be the same without the coal trade. They attempted to allow only for the wear and tear due to the particular operation involved, and included the differences due to the use of heavier and improved locomotives and cars specially built for the purpose; and, last but not least, the company considered the increased quantity and regularity of the trade. The railroad professed not to be anxious for the coal trade, and accepted the business only because of the delay in reaching the Ohio Valley. The quantity of coal included in the estimates was 105,000 tons per annum, the coal season lasting 250 days.

For 6 years, with varying fortunes in the matter of rights-of-way, and with conflicting influences as to termini involving the company in difficulties in its efforts to secure capital, the directors of the Baltimore and Ohio persisted in their plans of an extension through Cumberland to the Ohio River. Meanwhile development in Ohio itself was making actually apparent those possibilities of trade which, though they had been confidently predicted, had nevertheless seemed chimerical to the investing public. Moreover, the period of financial depression was past, and a new era of railroad-building was at hand. The reports of the company during these years show a succession of embarrassments over expiring charters and rivalries between States and between cities over the route to be selected, with threats of loss of important subscriptions if the wishes of any were disregarded. The balancing and adjusting of the conflicting claims of 3 States and of 5 or 6 cities was considered to be of first importance, and not until these claims were all in some measure provided for was work actually begun.

By 1848 these preliminary negotiations were all successfully concluded. In the same year the company's financial status was secured by an arrangement with the English banking-house of Baring Brothers,

by which a sale of 5 per cent bonds of the State of Maryland to the amount of \$1,000,000 was effected. While this seemed to some a disadvantageous arrangement, because it massed the bonds in the hands of a powerful house, the benefits secured to the company were of prime importance. The Barings became interested in guarding the price of such bonds from fluctuation, and this service, with the assurance of capital, enabled the company to place contracts for new portions of the road on favorable terms. Early in 1849, 103 miles of the heaviest sections between Cumberland and Wheeling were contracted out at an average saving of 22 per cent over previous estimates, and with the expectation of reaching Wheeling by June 1851, a date three years earlier than that originally contemplated.

The twenty-third annual report of the directors (1849) gives the following summary of the plans and prospects of the road.

"It is confidently believed that no line of road, either now or which may hereafter be projected, will be likely to hold out the same attraction to both trade and travel, seeking the shortest road and most advantageous outlet on the seaboard. Wheeling has been called the head of navigation of the Ohio river. From this point to Pittsburgh, the reputed terminus of the Pennsylvania Railroad, is a distance of 90 miles, and the river trade and travel, when it has reached Wheeling, is almost as near to the city of Baltimore in point of time, by the Baltimore and Ohio Railroad, when completed, as to Pittsburgh by the river navigation. The advantage of water transportation for articles of heavy bulk can not be too highly estimated, and it is believed that the travel on the Ohio River by steam, judging from the experience of our own waters, will never be materially diminished by other and more direct lines of communication by railroad. The cost of transportation from Cincinnati to Wheeling would not exceed \$2 per ton, and from \$2.50 to \$3 per passenger for the entire distance. The facilities afforded by the line of this road could not fail to give to the city of Baltimore the monopoly of this great highway.

"But looking, as we must needs do, to the connection with the extended line from Saint Louis and Cincinnati, the position of this company is still more advantageous. If the western roads converging at a common point, at Columbus, intersect this road at the Ohio River, the distance from Columbus to Baltimore is less than from the same point to Philadelphia by 55 miles, than New York via Cleveland and Dunkirk by 216 miles, and to Boston by 336 miles. These advantages in favor of the city of Baltimore by the line of this road are too formidable to be overcome, and they are rendered the more commanding when viewed in connection with the superior attractions of climate and the unobstructed harbor which at all seasons of the year opens a free access to the ocean.

"The city of Baltimore . . . defying the competition of any of her northern rivals, from her closer proximity to the trade of the West, and offering an outlet to her exports at all times free and unobstructed, may well be supposed to stand in a position second to no other city. With the Baltimore and Ohio Rail Road on the one hand pouring into her lap the products of Ohio, Indiana, Illinois, Missouri, Tennessee, Kentucky, and the extended valley of the Mississippi, and the Baltimore and Susquehanna road, with a continuous line to Harrisburg, placing her in closer connection with Pittsburgh by 23 miles than Philadelphia by her own central line, and offering the strongest temptation to

such of the trade and travel as may be drawn from its greater northern attractions, at Cleveland, or any other point, she may well claim, with these works accomplished, to have placed herself beyond the reach of future contingencies. Her system of internal improvements will be complete."¹

Such were the plans and expectations of Baltimore, and by the laws of trade they seemed justifiable. Why success did not follow in the measure expected by the directors of the Baltimore and Ohio Railroad belongs to the history of other roads and to the history of railroad financiering in a later period.

The road was "opened" to Wheeling in 1853. Meanwhile, serious competition for the western trade had arisen. The connection with Pittsburgh had been canceled by Pennsylvania in favor of the road from Philadelphia, which had been completed across the State in 1852. The Erie in 1851, however, began the most serious inroads upon the prospective trade of the Baltimore and Ohio. Instead of being the first to tap the western market, the route up the Potomac was the fourth; nevertheless, it would seem that this should have proved superior in its ability to attract business to either the New York or the Pennsylvania lines, since it was a single continuous line, and on that account, at least, far better adapted to the needs of through traffic than any other. The road seems to have been conservatively managed and slow to see possibilities for increasing its business by developing low-grade traffic. In 1849 and 1850 it was involved in suits over its failure to provide for "the reasonable demands of the hog trade," just at a time when such suits were particularly harmful to its reviving fortunes. The despised Cumberland coal trade in 1850 became a large and profitable item, amounting to 146,645 tons in that year, and necessitating the purchase of some 80 new cars, including cars constructed for coal traffic exclusively. A paragraph from the company's report for that year is of interest, for its cautious conservatism:

"The fact being now established, that the transportation of coal compares advantageously as to profit with the heavier tonnage carried over this road, and with no greater injury to the road itself, under the system introduced by the general superintendent, it becomes a matter of interest to look to such increase of power, from time to time, as the means of the company may justify."

On the whole, the company does not seem to have felt very desirous of the coal trade, but seems rather to have feared that an increase in it might prove troublesome when the road came fully into operation. Construction, once started, seems to have progressed fairly well, although the gangs of foreign labor gave trouble at times. The tunneling and other heavy work was advanced rapidly. On the financial side, the indorsement and sale of the Maryland bonds by the Barings raised and steadied their price in the market, and naturally increased the feeling of confidence in the road.

¹Baltimore and Ohio Railroad, *Annual Report*, 1849, p. 15.

Two important effects began to be felt as the road pushed on towards Wheeling. The first was a marked development of lateral turnpikes. The North-Western Turnpike from Parkersburg, on the Ohio, was intersected by the railroad at the Tygart's Valley Bridge in the spring of 1852, bringing that city and its tributary country within 29 hours of the seaport. Many other roads, some macadamized, were built or put under contract to reach the nearest junction-point with the railroad. The second effect was a reaction upon the city of Baltimore itself. Although the road had not yet reached the Ohio, its substantial contribution to the prosperity of Baltimore was no small item in the growth which the city was achieving. In 1850, three years before the road reached the Ohio, in fact when its westward extension was hardly begun, the tonnage of flour, grain, tobacco, live-stock, coal, and other articles entering Baltimore over the line of the railroad was 402,905 tons, and the westward traffic 74,650 tons, a total of 477,555 tons east and west. Locust Point, where the company's wharves were situated on tidewater, became an active and growing settlement, doing business with almost 700 vessels in 1850 and 1,445 in 1851.

In the latter year the company began to be interested in the coal trade. This trade outgrew the facilities at Locust Point to such an extent that the company first allowed a drawback, or rebate, of 6 cents per ton on all coal from Cumberland received and dumped at other than the company's wharves. The accommodations needed, however, were for from 300,000 to 400,000 additional tons annually, and the company encouraged the construction by private parties of wharves for the dumping and storage of coal by a flat rate of \$2 per ton on all coal received at private wharves. This, they thought, would not only relieve the company's wharves, but also increase the sale of the coal in the eastern market by lowering its price and insuring a regular and stable rate. A further set of plans provided for through transportation to New York by coastwise steamers and barges.

In 1851 the position of Wheeling as the important point on the Ohio River was threatened by a road chartered by Virginia to run from Parkersburg to intersect the Baltimore and Ohio at or near Three Forks Creek, in Taylor County. The only protection to Wheeling was in the proviso that the road should not be open for trade or travel until 12 months after the Baltimore and Ohio was completed to Wheeling. This Northwestern Road seems to have followed in the main the line of the Northwestern Turnpike above mentioned, but joined the Baltimore and Ohio somewhat earlier by taking a more northerly route. The question of what was to be the railroad center of the Ohio Valley became a very live one. From the geography of the country, it was clear that Parkersburg must eventually command the through travel from St. Louis and Cincinnati to the seaboard. The importance of this fact was exaggerated, however, because the shifting of the center

of transportation from the upper Ohio to Cincinnati, with the lessening importance of the river as an avenue of trade, making Parkersburg a station on the way, could not be foreseen. The city and railroad together prepared to meet the situation by subscriptions in aid of the new enterprise, thus apparently attempting to avoid the danger of undue competition between roads serving the same territory. That they were not in fact parallel roads the company was careful to point out; also that there was plenty of business for both.

The progress of the western road was somewhat devious, and was affected by other interests than those of Baltimore. Under pressure the eastern terminus of the road from Cincinnati was shifted from Belpre, opposite Parkersburg, to Marietta, farther up the Ohio, with the intention of connecting with a future road to Philadelphia. This connection, of course, was not at all pleasing to Baltimore, anxious to secure to her market the whole southwestern trade. The road to Parkersburg was put under contract in 1852. Baltimore subscribed \$1,500,000 towards the stock, and the Baltimore and Ohio Railroad another \$1,000,000, which, with \$500,000 in private subscriptions, was thought to be enough to finish the road.

The Baltimore and Ohio is a conspicuous instance of a road planned and built as a means of extending the market of an important urban community. The road is conceived to be a *Baltimore* road, with but one aim beyond paying its way, namely, to serve the interests of the city whence it came. It kept a watchful eye upon its two northern rivals, Philadelphia and New York, with their great tributary roads, and spurred on its own work by the slogan of its city.

The opening of the road in April 1853 was attended by two serious embarrassments—the inadequacy of the rolling-stock to meet the demands of the traffic which promptly developed and the lack of competent persons to man the road. Both conditions were, however, inherent in the condition of affairs at the time, and were so recognized. In addition, the uncertainty of high and low water on the Ohio, and the consequent irregularity of through traffic from the West, presented a perplexing operating problem, which was finally solved by the Ohio railroads approaching from Cleveland and Columbus. The estimated cost of the road had been \$7,124,648; its actual cost was \$7,576,051, or \$451,403 in excess of the estimate.

Although the Baltimore and Ohio, when it reached Wheeling in 1853, was without westward connections other than the Ohio River, which it had touched a year later than the Pennsylvania at Pittsburgh, there were several lateral coal roads which added largely to its traffic and helped the development of the intervening country opened in 1852.

Attention has been paid so far only to the westward growth of railroads from Baltimore. To the north a road, the Baltimore and Susquehanna, chartered in 1828, was put under construction in 1835,

and completed to the State line in 1838. From the State line a Maryland company built under a Pennsylvania charter to York and Wrightsville, where they connected with the Philadelphia and Columbia in 1838. The funds of the company were exhausted, and the road was put into operation before it was fully completed.¹ Pennsylvania appropriated \$2,350,000 in aid of the road, by stock subscriptions and loans. It was an important link in five different transportation systems, besides its place in the line of traffic from New York to Baltimore and Washington. In 1840, while the road was still incomplete, its business exceeded \$33,000 and in 1841 amounted to more than \$68,000.² When the road was opened it was expected to draw trade from Pittsburgh to Baltimore, but there seems to be no evidence that this expectation was realized. In 1848, ten years after it was opened, it was doing a business of \$233,756.

The road from Baltimore to Philadelphia via Wilmington, opened in 1839, has already been described in the section on Pennsylvania roads. The Annapolis and Elkridge, 22 miles long, connected Annapolis with the Washington Branch of the Baltimore and Ohio at Elkridge. Maryland aided this enterprise by bonding itself to the amount of \$300,000. From this time until the second era of railroad-building in the State, which began in 1850 to 1853, no roads were built save coal roads tributary to the Baltimore and Ohio.

¹*Niles' Register*, LVIII, 144, May 2, 1840; 167, May 16, 1840; LXI, 72, Oct. 2, 1841.

²*Ibid.*, 278, July 4, 1840; LXI, 72, Oct. 2, 1841.

CHAPTER XV.

RAILROADS IN THE SOUTH.¹

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SOCIAL AND ECONOMIC CONDITIONS.

Aside from physiography, certain social and economic conditions markedly influenced the development of transportation and commerce in the South. Among these may be briefly noted the following:

(1) Population in the South was widely scattered and, with the exception of a few cities, was nowhere in compact masses. Passenger traffic must therefore be relatively light.

(2) In each great economic province nearly every locality was issuing the same sort of output, and there was little interchange of products between neighboring districts. No traffic of volume between way stations might therefore be expected.

(3) But the demand for transportation of staples outward and supplies inward was urgent, and offered opportunities for profit to common carriers. The principal staples, however, were relatively light and precious, the producers had their teams at leisure in the marketing season, and the rivers always kept flowing to the sea. That is to say, the planters could, if need arose, assert their independence of even the railroads, and thus could always keep the freight rates within bounds.

(4) An awkward characteristic of trade for the common carrier was the great rush of business in the marketing season and the reduction of traffic during the lean months following in the spring and summer. On the cotton railroads the whole year's profit had to be gained practically between September and January.

(5) The institution of slavery involved the investment of wealth in slave labor and diverted capital from other investment. Moreover, the slave-trade, whether domestic or foreign, drained cash capital out of the districts where it had been earned and tended to make the well-to-do inhabitants debtors seeking to borrow rather than capitalists seeking to invest.

(6) The universal inclination towards agriculture diminished the supply of native white labor available for any other than agricultural employment, the presence of negroes and slavery repelled European immigrants, and the plantation form of organization for staple production almost completely monopolized the supply of negro laborers.

¹A large part of this chapter is compiled from Phillips, *History of Transportation in the Eastern Cotton Belt*, one of the volumes especially prepared for the purposes of this publication.

There was thus a singular dearth of floating labor, a dearth which discouraged, crippled, or ruined many undertakings.

(7) The plantation system, dominating the whole industrial life of the South, attracted nearly all the men of capacity into agricultural management, depleting the supply of efficient promoters and managers available for other industries. Many of the men who were active in the plans for river improvement, railway building, and the like, had more enthusiasm than judgment, while men of greater wisdom and poise often contented themselves with merely stating their opinions and refrained from active part in the battle of ideas.

(8) Individualism and conservatism prevailed in the South to a marked degree, and operated against joint undertakings and new enterprises. Many a project failed on this account, and those which succeeded had in every case to earn their victory.

As might have been expected, when such were the conditions, the initiative came mostly from cities, and the cities furnished the greater part of the capital employed. Experiments were made in the South with nearly or quite all of the transportation devices which were being discussed and applied in the northern States and in Europe. Some of these methods were wholly unsuccessful when used to meet the southern conditions; some were successful for certain localities, but failed in others.

PHYSIOGRAPHIC LIMITATIONS.

As it came to be developed in the South at large, the transportation system was a composite of land and water ways, supplementing one another with more or less efficiency for a common end. There was, first, the ocean highway, with reference to which it may be noted that the resort to ocean steamships after about 1820 freed the traffic from dependence upon currents of wind and water, and enabled mariners to use the shortest transatlantic route, thereby building up the northern ports at the expense of those of the South. Closely akin was the navigation of rivers and sounds, and so-called rivers, such as the Potomac and the James in their lower courses, and the bayous of Louisiana, in which there was an appreciable current. Here the possession of primitive boats would make the planter independent of more costly facilities for transportation. On the more rapid streams there was usually a long navigable stretch which accommodated descending freight; but these rivers had to be supplemented by roads to serve the returning voyagers. Even in the Piedmont country the rivers could be used in flood season to transport small boats with light cargoes, but could hardly be used at all for the upward journey. The introduction of steamboats provided means for upward navigation as far as the fall-line, but they affected the river problem within the Piedmont very little.

Across country and away from the streams, recourse was had first to buffalo paths and Indian trails, and then to roads which were cleared to permit wagon traffic. Then came the need of ferries, causeways, and bridges, and the resort to the toll system and public ownership. The rapid increase of settlement in the uplands in the later eighteenth and especially its rapid growth in importance in the early nineteenth century brought a demand for something more than local roads with county officials in charge; and yet that demand, as far as the planters and farmers were concerned, was often more apparent than real.

Canals were projected in many regions, and in some cases actually built; but in general they were found to be unsuited to the physical conditions, except in special cases. The rivers in the South flowed mostly in deep valleys or even gorges, which presented many obstacles to the building of canals along or across their courses, while the very heavy and irregular rainfall and the frequency of freshets and floods, especially after the clearing away of the Piedmont forests, made the danger of destruction of works exceptionally great in this region and were deterring conditions whenever canals were considered. Furthermore, the soil in some places was so porous that the water would seep through and leave a canal-bed dry; and in other places there was so much rock that canal construction was too costly. Canals, on the whole, were clearly not the solution of the problem, except in certain localities—for example, in the Dismal Swamp.

Efforts were made to develop systems of turnpike roads, and in Kentucky and Tennessee such roads were built with considerable success. But in the cotton belt the case was peculiar and unfavorable to the success of a toll system. The cotton producers harvested and marketed their cotton in the fall and winter season, when there was little other work for men or mules or wagons. The crop was of sufficient value, though somewhat bulky, to justify its transportation for long distances by wagon, on bad roads. In fact, with the long journey once begun, it did not matter particularly, since it was the leisure season on the farm, whether the team returned from market in three days or three weeks. Therefore, the quickened speed of paved roads was, in the eyes of the cotton producers, who were their own carriers, a smaller consideration than the tolls which must be charged upon such roads. It is not surprising, accordingly, that when a system of turnpikes was built in South Carolina in the twenties, it was permitted by the planters to fall into absolute neglect and decay. In the forties, plank roads were experimented with in Alabama with the same lack of success.

Realizing the inadequacy of all these earlier means of transportation, those who were looking to a final solution of the general problem were satisfied that that final solution required the construction of railroads. Railroads with steam locomotion, when once invented, were speedily

recognized as dwarfing the importance of all other agencies, and were nowhere accepted more eagerly than in the staple regions of the South. The press and the people in the later twenties and the thirties were agog with the new invention, which, it was thought, would carry cotton to the coast for a song, and bring in groceries and manufactures and mail, and perhaps immigrants, with marvelous speed and cheapness. The building of a system of railroads was a far more costly and difficult undertaking than the early projectors imagined; yet the building of the system did actually bring the solution of the southern problem of transportation, and the story of its progress and its work is a most important part of the economic history of the South in the later antebellum period.

THE RAILROAD AND ITS PROBLEMS.

With railroads in contemplation, the pressing question became one of finance. In early times there had been a general reliance upon individual enterprise for transportation, whether by boat, pack-train, wagon, or stage; but private means were not adequate to the later and larger problems. There had, however, been stage-lines and canals and turnpikes established by private companies, and the device of joint stocks was now relied upon in large part for railway building. But capital was scarce and timid, and though in some cases the hope of profit, together with patriotism for the South in its race with the North for population and wealth, led to the enlistment of considerable sums from private sources, public activity of some sort was generally essential for success.

The Federal Government had adopted the policy of building Federal roads to and through the Territories; and when Gallatin was Secretary of the Treasury, as noted in earlier chapters of this volume, he had planned a system of transportation to be built by the Federal Government throughout the whole country. But in the succeeding decades the hope of Federal railroads practically vanished, and the South, being mainly a stronghold of strict construction, furnished little advocacy of such a system. The idea of State ownership was more popular; but many individualists opposed it on principle and many others opposed particular propositions of that sort because they objected to levying taxes upon their own localities for the building of roads which would not reach their own districts.

The agitation for State railroads was not successful except in special instances, for in general the sentiment of individualism was too strong. Where the demand for railroads proved to be efficient, the favoring conditions were generally as follows: a number of individuals were willing to invest a part of their fortunes in the enterprises; the State governments were friendly and anxious to facilitate the projects—which they could do by granting charters giving permission to build, by subscribing to stock with State funds, and by granting special money-making

privileges, such as banking and issuing banknotes; capitalists at the North or abroad were willing to aid Southern railway projects indirectly by the purchase of State bonds, and later, when some of the roads had proved financially successful, they even subscribed directly for railroad stock; and last in this enumeration, but not least in practical effect, the city governments in the South were among the parties most keenly interested in the building of transportation lines which would increase and extend the commerce of their own cities. In addition, some of the newer States held in trust a fund from the United States derived from public lands, to be devoted to the improvement of transportation. In 1837 all of the States received a windfall in the distribution of the Federal treasury surplus; and this was used in many instances as an additional resource for internal improvements.

In the actual process of road, canal, and railway building, these several resources were utilized in varying combinations. In South Carolina, for example, the State subscribed for stock on an equal footing with other shareholders; in Tennessee the State pledged itself to provide funds to pay for rails when enough other subscriptions had been secured to build the road-beds; in Georgia the State made no subscriptions to the stock of the company roads, but pledged a real assistance to them in the building of a railway at the expense of the State to connect their termini with the Tennessee River and the projected railways beyond; some of the shorter lines were built entirely with private capital; and at least one short road in North Carolina, begun in 1847, owed its establishment to the subscription of a northern syndicate.

One cause for the scarcity of private local capital was the great demand for slaves to work the new cotton plantations that were developed in the first 20 or 30 years after the invention of the gin. People invested all they had in this industry, to the exclusion and neglect of other interests, but after about 1817, when production in the western cotton belt began to have the effect of reducing the price of cotton and of diminishing profits in the older fields, the Carolina planters began to cry out for cheaper access to markets. Turnpikes, the first device, were a demonstrated failure almost before they were built. Charleston began to lose its commercial supremacy to Savannah, Mobile, and New Orleans. The news of a successfully operated railroad in England stimulated the construction of a road from Charleston to Augusta, to draw away the trade of that prosperous center from Savannah. Towns and citizens in middle Georgia soon after combined in the Georgia Railway Company to build a railway west from Augusta, which was expected to serve as an extension of the South Carolina Railroad.

Next, a group of Savannah promoters, becoming alarmed, enlisted the aid of Macon and of many private citizens, together with the

indirect aid of the State and the backing of the city corporation, and began the Central of Georgia Railroad Company, building a road from Savannah to Macon. A continuation to the northward of Macon was undertaken by the companies; and the State government determined to insure the success of both the Georgia and the Central of Georgia lines by building a State-owned road to Chattanooga, expecting connections to be provided in Tennessee by other parties. The building and operation of these lines in Georgia, with others supplementing them, resulted in diminishing the cotton receipts and the commerce of Mobile and New Orleans and spurred those cities to railroad enterprise.

All the chief ports of the lower South, as well as several inferior ones, were thus reaching out for the trade of the cotton belt; and, with still greater ambition, they began to strive further for the trade of the great Northwest. Baltimore, Richmond, and Norfolk, each with its special road, as well as Philadelphia and New York, were also ere this competing for the western traffic; and eventually each of them was in a greater or less degree successful. Charleston, it is true, was disappointed in her hopes as regards this commerce, for her great scheme in the later thirties for a direct road to Cincinnati fell through; and as regards western trade the South Carolina Railroad proved to be merely an annex to the Georgia system. In fact, all of the seaports of the lower South had built their hopes of northwestern traffic much too high; for when the lines were completed and freight began to flow southward most of the western commodities found their market in the cotton belt itself, and never reached the southern seaboard. Atlanta arose and thrived upon the adversity of the ports.

Contemporaneously with the building of railroads into the interior from the coast, another system of roads parallel to the coast was gradually extending from Washington through Richmond, Raleigh, Augusta, and Montgomery, to Mobile and New Orleans, and there was developing also a system connecting the Shenandoah-Tennessee Valley with the Northeast, the Virginia coast, the South, and Southwest. In addition a moderate number of branch lines from the main stems, and in the West a few short roads to supplement the rivers, were being built.

Many other roads projected at this time failed in the time of panic and severe depression from 1837 to 1845. After that trying-out period a more rational policy prevailed and the less urgent demands were relegated to the distant future. Completion of main lines, largely independent of one another, was followed by the building of links providing transfer facilities, and integrating the separate systems. By 1860 every portion of the South, east of the Mississippi, had been put in railway communication with every other portion and with the outside world.

REACTION OF RAILROADS ON ECONOMIC LIFE.

By the end of the ante-bellum period, therefore, the South was equipped with at least the skeleton of a well-planned railway system, reaching through nearly its whole extent and answering all the principal needs of transportation; and yet, in the larger aspect that system was a source of weakness, as well as a powerful agency for increasing wealth and developing resources. The building of railroads in the South inevitably led to an extension and intensification of the plantation system and to a consequent increase in the staple output. The southern railroads increased the competition in staple production and diminished the price of exports. While this lowering of the price was undoubtedly a benefit to the outside world, it resulted in the injury of southern producers in certain sections which had not depended upon railroad transportation in marketing their product.

A view of the general system of transportation just prior to the railroad era, say in 1830, would show that, except for the introduction of steamboats upon the chief rivers, no great change in the character of either vehicles or avenues had resulted from the long agitation and the many efforts. There was some improvement in the river-beds, and some bridges and causeways and a few ill-kept and little-used turnpikes had been built. Few substantial changes of any sort in the general system of transportation had been effected, except that, by the use of steam, freight could, in favorable seasons, ascend the streams with greater ease and economy. The rivers crossing the pine-barrens were still the main courses of traffic; the streams above the fall-line served for some down traffic, but not for much; there roads and wagons were still the chief reliance. Teams and wagons also crossed the pine-barrens in the traffic with the coast cities, though in diminishing numbers. Passengers and the mails were carried upon the principal routes in stage-coaches running daily, weekly, or at other intervals, according to the traffic demand. There were relay stations and taverns of a character not to elicit praise from travelers. The principal line for mail ran parallel to the coast from Petersburg, whence many news items for the local press were obtained, via Fayetteville or Raleigh and Columbia to Augusta, Macon, and beyond, with lines branching to Wilmington, Charleston, Savannah, and to the various small towns of the interior. For the remote districts, particularly those in the mountains and the pine-barrens, the mails ran seldom, if at all, and stages never.

The centers of traffic were the seaports and the towns at the head of navigation. In addition, a number of interior villages, owing their first rise to their being county seats, were now developing some commercial activity for the service of the planting population, now growing thicker and more prosperous, about them. The towns of greater elevation, however, had to wait until the railroad era for their

distinctive success. The situation was still in the control of the water-way towns. All towns with commercial prospects had great commercial ambitions for the traffic of the distant interior and became keen rivals in their efforts to secure this traffic. This is illustrated, for example, in the frequent instances where merchants would compound for high bridge fees and secure the entrance of farm wagons into their town toll free, in case a river had to be crossed from a debatable area.

On the whole, the cotton belt was so far removed from the sea, and transportation was so costly, that practically nothing but cotton was sent to markets and few things that could be produced at home without great disadvantage were imported. The cotton planters would, for example, have been glad to purchase a large portion of their grain and meat supply at moderate prices; but the immensely long and round-about transit for such commodities, *i. e.*, from the northwestern fields to the Ohio, down the Mississippi, thence by transshipment to Savannah or Charleston, thence by a second transshipment to the edge of the cotton country, and thence to destination, hauled by the local merchant or planter, with freight charges and numerous middlemen's profits, not to speak of time and delay and risk of loss, made the cost too great for the planters, save in emergencies. There was some talk of establishing a route for commerce across the mountains, but as yet all men's faces were turned to the river towns and to the southeastern coast when looking for supplies. It would have been possible for the resident of the Blue Ridge foot-hills north of the cotton belt to supply a part of the plantation community with foodstuffs and home-made manufactures, and in a small measure they actually did so, but there were no towns so located as to handle this trade, and it continued long on a peddling basis. Not until the founding of Atlanta were the foot-hill people supplied with an organized market for their produce.

An interesting question is, who did the wagoning business? It is apparent that not every man was his own carrier, but historical data upon the class of professional wagoners are extremely scant. Such evidence as exists warrants the statement that the class was considerable and important, at least in the uplands district. Characteristic of the period was the predominance of individual enterprise and self-reliance. Combination of efforts was resorted to only in a few instances of steamboat, canal, and bridge companies and the like, while in most instances every man operated in an individual capacity. County officers chiefly were depended upon for the care of the highways, and were a poor reliance. The system of traffic was generally informal, irregular, expensive, and inefficient. Common carriers were not yet predominant, and under the necessity of every man being to a greater or less extent his own carrier, and often his own road-mender, the state of affairs was burdensome and exasperating to the community.

THE CHARLESTON AND HAMBURG RAILROAD.

In 1821 Charleston awoke to the fact that her retail trade was being absorbed by the chain of small towns at the head of navigation, lying between the low country and the Piedmont. Although this meant a practical loss to Charleston, it indicated a decided growth in the prosperity of the State at large, and gave Charleston the opportunity to gain possession of the wholesale trade. To do this it was absolutely necessary that the means of transportation to the up-country should be improved sufficiently to carry comparatively large stocks of goods at a price which would not be prohibitive. The situation as regards the city of Charleston was such that some of the leading business men declared it to be desperate. The whole of the city's commerce consisted of rice and cotton, outward bound, and on this the city was wholly dependent, since it had no manufacturing industries.

The Charleston business men set their minds first upon capturing the Augusta trade as a vital necessity. The idea of a railway was under discussion as early as 1822, but until 1827 a canal was still the topic of chief consideration. On December 6, 1827, a citizens' meeting was held in Charleston and a petition adopted asking the legislature for a survey of the country between the Ashley and the Savannah Rivers with a view to a canal which would unite them, and a survey of the country between Charleston and Augusta with a view to a railroad.¹ The legislature was in session and a representative from Charleston had introduced a bill on December 4 to incorporate a company to establish a railway between Charleston and the towns of Hamburg, Columbia, and Camden. The bill was speedily enacted, but its provisions, which were devised more for bridge and turnpike companies, were not adapted to a railway, and a second law was enacted giving to the company all necessary powers. Elaborate estimates were made concerning cost and revenues by a committee of Charleston merchants. It was not decided at the time whether the road should use horse-power or steam.

Subscription books were opened in March 1828. The necessary amount was immediately subscribed by Charleston business men and the company was organized in May. The work of survey was begun at once. Congress was appealed to at about the same time to remit the duties on the iron which must be imported for the railroad, but this was refused, and when in its place an attempt was made to secure a subscription from Congress to the stock of the company, the States' rights newspapers promptly cried it down as a case of truckling to the Federal Government and an invitation for it to extend its scope of action into unwarranted fields. In the state of public sentiment of South Carolina at the time such a request was clearly ill-advised. The report upon location showed that there would be no special difficulties in

¹*Georgia Courier*, Dec. 10, 1827.

construction, save at the Hamburg end, where an inclined plane could be used. As to motive power, the committee decided that steam-power would probably be the most economical. In their inexperience the company adopted very crude plans of road construction, which necessitated rebuilding the road a few years later.

In September 1829 a new engineer was employed, and he proceeded to change the whole route of the road, laying out almost an air-line from Charleston to where Aiken now stands. This route, lying through Summerville and Blackville, was far enough north to avoid crossing the Ashley River, and crossed the Edisto some 30 miles above the former, cutting off 14 miles of length. In 1830 the stock subscriptions amounted to \$581,340, and the directors were authorized by resolution of the stockholders to proceed to definite location and letting of contracts. This was done late in 1830, and work was pushed on rapidly in 1831, though the work of constructing the road-bed and track was delayed and the expense increased above the estimates by the prevailing scarcity of labor. When a number of contractors along the line advertised for laborers at the same time the available supply proved entirely inadequate. The slaves were employed upon the routine work of the plantations, the free negroes were few, and the comparatively few white laborers in the country were not inclined to accept the employment offered. The competition of the contractors carried the rate of wages to 50 and 75 per cent above the rates formerly prevailing, and the supply was still short of the demand. Some of the smaller contractors were obliged to forfeit their contracts,¹ in consequence of the dearth of labor, and the principal firm, Gray and Company, resorted to the expedient of importing white laborers from the North or from Europe.² By November 1831 there were 102½ miles of road under contract, employing 637 laborers. The next spring there were more than 2,000 at work. Efforts were made to push the work still faster after the stockholders' meeting in 1832, and contractors kept as many laborers at work as they could find to employ.

The members of the company, however, made constant complaint over the small number of men at work, and the recurrence of the malarial season formed a further serious interruption, scattering a large part of the force for the summer and beyond easy recall in the autumn.³ The greatest difficulty of the whole work was that the engineers who directed it were "apprentices, who only began to be expert when the work was done." Financial troubles were numerous. In 1833, the directors used the 1,187 shares of stock still on hand as security for a loan at 7 per cent, rather than call upon the stockholders for assessments beyond the value of their stock. A loan of \$100,000 was also secured from the State government.

¹*Charleston Courier*, May 3, 1831.

²*Niles' Register*, XLI, 219, Nov. 19, 1831.

³*Charleston and Hamburg Railroad Company, Annual Report*, 1833.

In September 1833, the road was completed to Hamburg, at a total cost of \$904,499, or \$5,625.92 per mile,¹ including 7 locomotives, 46 cars of several sorts, some horses, a few negro slaves amounting in value to \$6,146, and several parcels of real estate, valued at \$15,388.25. The road was put into operation with a regular schedule as far as Branchville, 62 miles, on November 7, 1832; to Midway, 10 miles farther, on February 7, 1833; and to Hamburg, 136 miles, as the road actually measured, at the beginning of the following October. The road when completed was the longest railway in the world, and its operation was considered marvelous at the time. Through the use of a truck devised by Horatio Allen, the chief engineer of the road, who had gone north in 1831 to contract for locomotives, the company in 1832 had added several eight-wheeled engines to its equipment, but by reason of their bad adjustment to the character of the fuel supply they were not available for service until the summer of 1833. Two diminutive engines, of four wheels, the *West Point* and the *Phœnix*, were the whole motive-power of the road. With these the company handled all the passenger traffic that offered, but confined their handling of freight to cotton downward and light merchandise upward. Live-stock, lumber, and other articles which could pay only low rates were necessarily declined by the road for a time.

A system of inspection and repairs for the road, and for safeguarding against accidents, was developed. Sections of from 4 to 8 miles in length were laid off, and a watchman and one or two negroes assigned to each. The watchman was required to walk daily up one side of his section and down the other, carefully examining every part under his charge and making all necessary repairs, clearing the road of weeds and shrubbery and keeping up the supply of fuel and water for the engines. These men in turn were supervised by general foremen, and were required to return monthly reports of work and expenses.

Rates of transportation were put at the legal maximum allowed by the charter. The company considered that the legislature had taken good care of the peoples' interests in fixing the maximum charges, and since they were only half as high as the rates formerly maintained by stages, wagons, etc., in the absence of competition they saw no reason to put them any lower. It was even then cheaper for owners of slaves to pay their passage on the railroad than to make them walk the distance, and raftsmen on the Edisto found it more economical to send their paddling boats back by freight after reaching Charleston. In the suburbs of Charleston a different basis of rates was adopted—rates being so reduced that “a poor man can not afford to walk.” On the whole, the Charleston and Hamburg Railway pleased its public, even though for the first three months accommodations offered were very poor and receipts averaged only \$58 per day. By the next spring

¹*American Railroad Journal*, III, 466, Aug. 2, 1834.

(1833) this had grown to \$120, in spite of the fact that much of the traffic was in road materials, and by 1835 business increased until receipts averaged over \$1,000 per day.¹ The volume of traffic varied with the season, being especially heavy when cotton was being marketed. Operations reached the stage of a regular routine of time tables in 1834.

The Charleston and Hamburg Railroad, when it was constructed, was, as mentioned above, the longest in existence. The changes in level between the two cities were overcome in part by an inclined plane 3,800 feet in length and 180 feet in descent. From the foot of the plane the remainder of the descent was 10 miles long, with an average inclination of 18 feet per mile. The road was a single track, with necessary turnouts, except at the inclined plane, where there was a mile of double track. For the first few years of its operation, all earnings of the road were devoted to the liquidation of the company's debt, increase of equipment, and improvement of road-bed and track. The latter especially was a source of heavy expense, for the original structure on piles and trestling over the low places was found inadequate to the needs of traffic and had to be rapidly replaced with earth embankments. A still more serious difficulty was found with the strap-iron rails. The company began to replace these before 1834 with heavier rails having flanges turned down to protect the inner side of the wooden stringer from the flanges of the wheel, thus producing stiffer and less uneven track.

When a celebration over the opening of the road to its full length was held on October 2, 1833, plans already existed for its extension, both into Georgia and into Tennessee. Elias Horry, the president of the road, delivered an address, which called attention to the prospects of trade from these sections even before roads were built into them. He invited public attention especially to the prospects north and west—to the possibility of tapping the Piedmont more effectually, and, further, of penetrating the mountains and making the trade of the great West tributary to the southeastern seaboard.² The idea was an attractive one and destined to play an important part in the development of the section.

The road in the first few years of its operation did fairly well in a small way. The 135 miles of its route were traversed in 12 hours, later lowered to 8. During the cotton season traffic was heavy, one notice showing the arrival at Charleston in 1834 of 60 freight-cars drawn by 3 engines, and bringing 980 bales of cotton.³ The traffic gave promise of a moderate return upon the investment, after a time, when the road should be put in proper condition and the territory

¹Directors of the South Carolina Canal and Railroad Company, *Annual Report*, 1833; *Niles' Register*, XLIX, 138, Oct. 31, 1835.

²Elias Horry, *Address*, Charleston, 1833.

³*American Railroad Journal*, III, 769, Dec. 13, 1834.

developed. Such a prospect was, however, far from satisfying the promoters and stockholders and the Charleston interests with which they were identified.

The line to Hamburg was but one link in a contemplated chain. Its particular mission was chiefly to divert a large traffic from Savannah to Charleston and to develop a much more intense traffic demand than had existed. To extend the traffic area the Charleston interests began to promote further enterprises even before the line to Hamburg was completed. Extensions both westward and northward from the initial lines were wanted as feeders. The citizens of Augusta and the westward towns were constructing the Georgia Railroad, and thus for Charleston the chief problem in that direction lay not in construction, but in securing a closer connection with the two roads already building. Augusta, acting in the interests of the city's draymen and tavern-keepers, forbade the two tracks approaching within a mile of each other; thus necessitating a breaking of cargo and putting the Savannah boats on a footing of equal or superior competition with the Charleston railroad in bidding for the cotton brought to Augusta by the Georgia Railroad. The chief extension task for Charleston lay towards the north, in the building of branch railroads to Columbia and Camden, and of prolongations thence indefinitely towards, and even perhaps across, the mountains.

The relation of the State to the Hamburg Railroad was a result of the enthusiasm for internal improvements which raged throughout the South at this time. As happened many times in the early railroad history, the State's investment was an unprofitable one. The traffic of the road was wholly dependent on the price of cotton. When cotton was low and the population of Charleston fell off, there was neither freight nor passenger traffic enough to support the road. When cotton began to rise more railroads were built and the hopes of southern promoters aspired to connections with Louisville and Cincinnati and to the exploitation of the country intervening. When cotton fell to 6 cents, railroad enterprise languished. The State went into the Hamburg project a creditor of the railroad to the amount of \$100,000, well-secured and bearing interest, and emerged with 8,000 shares of depreciated stock which had cost \$800,000. It also indorsed the bonds of the Hamburg Railroad for \$2,000,000, which it borrowed, and was further responsible for \$100,000 loaned the Hamburg Railroad—when this road was consolidated with the Louisville, Cincinnati and Charleston—and lost in the panic of 1836 and 1837. In addition to its direct debt, the State was responsible, as security and creditor, to the extent of \$4,000,000 and interest, on account of an expenditure in an effort to build a branch railroad 67 miles in length. There was much injudicious and unnecessary planning of railroads in a country not yet ready for them, as well as much opposition on the part of the wagoners, who saw their trade being taken away.

Railroad building, in fact, was involved with several other interests. At a meeting in Charleston, held May 14, 1836, to appoint delegates to the railroad convention at Knoxville, Mr. Blanding, in an address to the citizens of Charleston, said that he regarded a connection with Cincinnati as more important than with Louisville:

"The South [meaning evidently Charleston] would then be able to compete with eastern cities for the trade of Ohio, and, with a branch to Louisville, for the trade of Indiana. The connection with Cincinnati, from a political point of view, meant detaching a powerful confederate from the East, as far as commercial and social relations could do it, and might keep Ohio a friend to the South on the slavery question, as she would receive all the benefits of slave labor, indirectly, without any of its evils. If the road ended at Louisville in a slave State, it would not be attended with so many advantages."¹

THE LOUISVILLE, CINCINNATI, AND CHARLESTON PROJECT.

The launching of the Charleston and Hamburg Railroad had, of course, stimulated the desire already existing for a connection of the Southern Atlantic seaports and the Piedmont region with the grain-growing regions beyond the mountains. Remote communities, impressed by the daring spirit of Charleston and her show of financial resource, began to inquire into ways and means of getting into touch with her projected railway system. In 1828 a citizen of Cincinnati, formerly a Charleston man, proposed a railroad from Cincinnati to connect with the Charleston line. In 1832 a convention was held at Asheville, North Carolina, at the invitation of citizens of Buncombe County, North Carolina, to consider a railroad connecting east and west by an interstate road along the route of the French Broad River. Twenty-eight delegates were present, 8 from 4 counties in Tennessee and 20 from 8 counties in North Carolina. At the request of the convention committees were appointed for each of the States—Tennessee, North Carolina, and South Carolina—to act together by correspondence or otherwise, in furtherance of the interests of the proposed railway. Also, at the instance of the convention the President of the United States appointed a competent engineer, Long, to make a survey of a route for a railroad from Columbia to the mouth of the Nolichucky in Tennessee and a survey of the French Broad and Holston Rivers to Knoxville.

South Carolina promptly voted her third of the \$3,000 estimated as the cost of the survey, on condition that the other two States concerned voted their shares. The North Carolina committee reported that the route within that State was without doubt feasible, and advised application for legislative charters. The committee for Tennessee reported that the State's energies were then concentrated on the improvements at the Muscle Shoals. The two latter States voted no

Blanding, *Address to Citizens on the Louisville, Cincinnati, and Charleston Railroad*, Columbia, 1836.

money, and hence the project necessarily lapsed for the time. In both cases it is probable that the forces active in behalf of the measure derived their motive from Charleston rather than from the people of the respective States. There were no further developments for two years, until 1835, when an apparently independent movement in Cincinnati resulted in the formation of a citizens' committee to inquire again into the railroad project. The committee reported that the mountains were lower in the direction of Charleston, and that a railroad connection was both feasible and desirable.

This renewal of activity on the part of Cincinnati awakened interest again in Charleston, and a meeting was called in October 1835, by the city council, at the instance of the chamber of commerce. Robert Y. Hayne opened the meeting, presenting the proceedings of the citizens of Cincinnati and advocating a hearty cooperation on the part of Charleston with the scheme. A committee was duly appointed, with Hayne as chairman, to carry out the resolutions of cordial interest adopted, and this committee reported at the adjourned meeting on November 4. It presented the report of the Cincinnati committee and letters from prominent citizens to show the essential connection between the prosperity of the southern and western States and a railroad from the Ohio to the Atlantic. Such a highway would open an inconceivably great traffic, was practicable, and could probably be built within a few years. It would not be beyond the means of the State through which it must pass, and its shortest and cheapest route would be that connecting with the South Carolina Railroad, and therefore terminating at Charleston. The possibilities of a political alliance were also mentioned.

A committee of correspondence was appointed, with power to have explorations made, the expenses of which, it was recommended, should be paid out of the city treasury, and the legislature was requested to make liberal appropriations for surveys, etc. Accordingly commissioners were appointed and \$10,000 appropriated for the purpose of a survey. The other States were invited to cooperate, but failed to do so, and the South Carolina commissioners were able only to make an instrumental survey in the mountains and a general reconnaissance of the remaining easier portions of the route. They reported in July 1836 that they had found and surveyed two practicable routes crossing the Blue Ridge, and had found the Cumberland range feasible to cross at Cumberland Gap, where the boundaries of Virginia, Kentucky, and Tennessee meet. One of the two available passes of the Blue Ridge lay a short distance east of the turnpike from Greenville, South Carolina, to Asheville; the other was at the head of Ruby Patch Creek, a tributary of Broad River. The route to either involved steep ascents. The latter, it was thought, would require three or four inclined planes, while the former might be used without planes. Beyond the Blue

Ridge the route presented difficulties on account of the steep, rocky banks of the winding river, which necessitated tunnels, and on account of the deep cuts and fills to the Tennessee boundary. Thence the route led through Cumberland Gap, which would have to be crossed either by inclined planes or a tunnel a mile in length; it then continued by way of Williamsburg, Mount Vernon, Crab Orchard, Lancaster, and Nicholasville to Lexington, and from there either along the ridge to the Ohio at Covington and Cincinnati, or along the valley of the Licking River to the Ohio near Newport. Branches might be built to Maysville in Kentucky and to Georgia through Rabun Gap or westward. There were rich deposits of iron ore and coal on the route, especially at Cumberland Gap, and this was thought of apparently as an economical means whereby the company might make its own rails rather than as a source of traffic.

The cost of the road was estimated at \$11,804,046. Of this sum, the South Carolina Railroad was expected to provide about \$1,000,000, and for the rest of the undertaking a large company was chartered.¹ This was at first called the Cincinnati and Charleston, later the Louisville, Cincinnati and Charleston Railroad. The capital was raised by State subscription, chiefly among the business men of the cities. In 1838 a loan of \$2,000,000 was negotiated in England by General Hamilton.² State and city subscriptions might also be received. The road had power to construct a continuous road from Charleston to Cincinnati and such branch roads as it pleased. If the other States agreed, no other parallel road could be built within 20 miles, during a period of 36 years. Rates were established at the scale previously set for the South Carolina Canal and Railroad Company.

The company was empowered to increase its capital to an unlimited extent and its stock, dividends, and property were forever exempt from taxation, unless the rate of dividends should grow to exceed the legal rate of interest in the States through which the road passed. The company was forbidden to carry on any banking operations or to effect any insurance except on goods in transport or in the custody of the company. A further requirement was added, to insure uniformity, that the company should be entitled only to such powers and privileges as should be granted to it by all the legislatures incorporating it, and should be subject in each State to all of the restrictions and disabilities imposed by any of the others, and unless the three other States also passed acts of incorporation, the South Carolina act was to be invalid. Tennessee and North Carolina granted the charters at once, but Kentucky refused at first, because the proposition favored Cincinnati at the expense of Louisville. So the South Carolina charter had to be amended by canceling the requirement in regard to Kentucky.

¹South Carolina, *Statutes at Large* (ed. by Cooper and McCord), VIII, 409-418, No. 2658.

²*Niles' Register*, LV, 306, Jan. 12, 1839.

This matter was later adjusted by inserting a requirement that the company should build branches to Louisville and Maysville. In this form a charter was granted by Kentucky, and the road was called the Louisville, Cincinnati and Charleston.

At about the same time a summons was sent to all States and communities interested to send delegates to a railroad convention to be held at Knoxville, Tennessee, on July 4, 1836, and days following. More than 400 delegates, representing 9 States, were present. The Georgia delegates tried to swing the route of the road into their State by showing how the volume of business was increasing over that of South Carolina. The South Carolinians defended the original scheme and it was so left, save that the Georgians were permitted to build a branch from Knoxville to some point in Georgia, at their own discretion and expense.

The Georgians made no further effort to deflect the Louisville, Cincinnati and Charleston Road, but upon returning home held a convention of their own and initiated a movement which resulted in the building of the Western and Atlantic Railroad as an independent work. Their course was the wiser, under the circumstances, and resulted in success, while the main work of the Knoxville Convention failed to achieve any very tangible results. It aroused popular enthusiasm, however, and indorsed the Louisville, Cincinnati and Charleston project, and so served a purpose in popular education. After its close the chairman issued an address to the people, arguing the advantages in favor of the railroad and urging widespread support for it.¹ He showed the present value of the traffic by the wagon-roads and how it could be increased with the better opportunities for carrying goods. The apprehended danger to the driver, tavern-keeper, and small farmer he pronounced wholly imaginary, for business would so increase as to change the whole condition of things. The project received more general attention in the States concerned than any similar enterprise before or since. John C. Calhoun went over the proposed route to investigate its suitability. Merchants, bankers, farmers, and politicians, and especially the men of Charleston, were alive to the plan.

The charter of the road required that \$4,000,000 should be subscribed before January 1, 1837, and subscription books were opened in various towns in October 1836. Colonel Hayne advised every man to purchase as many shares as he could pay the first installment of \$5 upon. The State legislatures were urged to subscribe liberally from public funds. The required amount was raised in November, but the directors were fully aware how inadequate the sum was to the size of the work. One estimate indeed, of an informal nature, put the amount at \$19,000,000, instead of the former expectation of \$11,000,000. The company immediately appealed to the several States and cities for

¹Hayne, *Address in behalf of the Knoxville Convention, to the Citizens of the States interested in the proposed Louisville, Cincinnati and Charleston Railroad.*

franchises and subscriptions. The legislature of Tennessee directed its governor to subscribe for \$650,000, but there were not enough subscriptions to assure the success of the enterprise.

In this condition of affairs the promoters of the road brought forward a scheme for an ancillary banking corporation. No person not a subscriber to railroad stock could subscribe for bank stock, and each railroad subscriber might own bank stock equal to the amount of his holdings in the earlier company. The bank was to be regarded as formed when \$8,000,000 of stock was subscribed. In such event the directors of the railroad company were to call on the stockholders of the railroad company to pay the first installment of \$12.50 per share towards forming the capital of the bank, and any stockholder in the railroad paying the installment called for should be regarded as a stockholder in the bank for the number of shares on which such payment should be made. The directorates of the two corporations were to be separate bodies and their capital kept distinct. The bank was not to be liable for the debts of the railroad, but the road was to be liable for the debts of the bank in case of its failure. The bank was empowered to issue notes to twice the amount of its capital and might contract debts to three times its capital. Capital, funds, and dividends were to be free from all taxation by the States granting the charter, though its real estate and property held in pledge might be taxed.

The principal bank was to be at Charleston, but branches might be established at discretion, so long as they were within the States granting the charter. Each share in the bank was to be inseparably connected with a share in the railroad company and never to be transferred without it, and the forfeiture of a railroad share by non-payment of any installment called for involved a forfeiture of the corresponding bank share. The life of the banking corporation was to be limited to 31 years, provided the construction of the railroad was pushed with the speed prescribed. Otherwise, after a specified interval, the banking charter was to lapse and become void. The unusual privileges and opportunities of the bank were expected to draw people into the scheme, put the shares at once at a premium, and so increase the sale of the railroad shares. It was expected that the added stimulus of the banking privilege would cause the railroad stock to be doubled from \$4,000,000 to \$8,000,000 within the year and that bank dividends, beginning early, would reconcile the stockholders to delays in the receipt of dividends on their railroad shares.

A bill for a similar banking charter was introduced into the legislature of North Carolina. There were many arguments against it,¹ but the popular demand for the railroad was too strong and the bank was quickly chartered. During the spring and summer of 1837, the railroad company, aided by the banking prospects, increased its stock

¹See Phillips, *A History of Transportation in the Eastern Cotton Belt to 1860*, p. 191.

subscriptions to about \$5,300,000. To make the grant of banking privileges valid, a charter was required from a third State and a subscription of \$2,700,000 to the company's stock. Tennessee granted the charter and subscribed \$650,000 to the stock, but Kentucky refused. The legal concurrence of three States had been secured, however, and the only thing remaining was to obtain \$2,050,000 more in stock subscriptions to the railroad. This was accomplished by the purchase of the South Carolina Canal and Railroad Company by the Louisville, Cincinnati and Charleston, and its franchise and equipment, at a price of \$2,400,000, an advance of 25 per cent over the original cost of the stock. This sum was to be paid one-third in cash and the balance in one and two years, while a condition of the purchase was that a subscription should be made in behalf of the stockholders of the South Carolina Railroad and Canal Company for \$2,000,000 in the Louisville, Cincinnati and Charleston Company, the first installment for which was to be deducted from the purchase money. This carried the stock subscription to within \$50,000 of the \$8,000,000 required before the bank could begin operations. This deficiency was promptly made up by the city council of Charleston and the bank charter was thus made secure. It was to begin operations in November 1838 and earnings could be then expected to accrue. The establishment of the bank was expected to give a fixed value to the railroad shares, and hence make them more stable and desirable as investments.

When the Charleston and Hamburg was taken over by the Louisville, Cincinnati and Charleston, the former was engaged in embanking its road and relaying its track, as the original road-bed had proven unequal to the strain. The road from Charleston to Columbia was represented as the most pressing need. The survey for the road had been first made in 1834, and subscriptions for it were eagerly made in 1835; but disputes arose as to the best route to be taken, whether the road should run direct from the junction-point at Branchville to Columbia, or make a wide bend eastward and serve as part of a branch to Camden as well. The ultimate decision was in favor of the eastward deflection, for that route eliminated the necessity of inclined planes.

The work proceeded slowly, owing to the greater interest taken in the railroad across the mountains and also to the intervening depression in 1836 and 1837. Up to 1838 the extremely small amount of branch building done was paid for by funds secured from the sale of additional shares of the regular stock. The Columbia branch was started by the Louisville, Cincinnati and Charleston in 1838, after the purchase of the South Carolina Road, and was long in building, owing to the severe depression. It was opened for 17 miles only in 1840, and for its full length in 1842.¹ The Camden branch was not built until 1848. The

¹*Niles' Register*. LXII, 288, July 2, 1842, quoting *Charleston Mercury*.

cost of relaying the original road and of building the Columbia branch was between \$1,800,000 and \$2,000,000. The State of South Carolina indorsed the company's bonds for \$2,000,000, and they were sold in London in 1838.¹ Part of the resulting specie was to be used in launching the bank.

The Southwestern Railroad Bank began operations in November 1838, as scheduled. Abraham Blanding was president. For some months the bank was notably prosperous; then came a series of disasters, which, although the bank escaped outright destruction, crippled all operations and finally caused the complete reorganization of the railroad company. The financial situation of the country was in a seriously uncertain state. In the later years of the United States Bank, Nicholas Biddle had given its backing to various inflated and impracticable schemes.² The period became one of wild speculations, both in land and internal improvements of all kinds.

In 1839 the price of cotton began to fall. Before it was generally realized what was happening, the process of railroad construction promised to become less difficult, for the planters in the section through which the road passed, not receiving as high prices for their cotton now as formerly, became eager to take the contracts for grading, which at an earlier date they had refused. These contracts now provided the most profitable employment for their slave labor. The real significance of this was little appreciated. Disaster for any enterprise in the South requiring large capital was, nevertheless, inevitable, if cotton went too low. In 1839 came the terrific "cotton crisis." There had been a desperate attempt to keep up the price of cotton, but it had failed. In the same year the two men upon whose enthusiasm and initiative the railroad and banking corporations had largely depended—Hayne, president of the Louisville, Cincinnati and Charleston, and Blanding, president of the Southwestern Railroad Bank—both died. Cotton prices went still lower, and there was a tremendous crash throughout the cotton belt. Under all these difficulties the bank managed to exist and the railroad to continue the construction of the line from Branchville to Columbia. Its call for five further installments on its stock was haltingly answered with many complaints of hard times, especially from the larger stockholders. By 1840 only 17 miles had been completed, public confidence had largely waned, and stockholders were defaulting their payments and begging the company to go slow in its expenditures. The prospect of a road across the mountains, built by this company, within the time of the charter, was almost vanishing. Reorganization and adjustment became imperative. Moreover, the Hiwassee Railroad, which was backed by the State of Tennessee, was being pushed so rapidly that it was expected

¹ *Niles' Register*, LV, 306, Jan 12, 1839; 129, Oct. 27, 1838; 178, Nov. 17, 1838; 289, Jan. 5, 1839.

² Knox, *History of Banking in the United States*, 77-78.

to be in operation between Knoxville and Charleston in a few years, and two railroads over the same route would be useless.¹

The private stockholders of North Carolina and Tennessee held a meeting at Asheville in September 1840, and petitioned the company to refund to them the amounts paid on their stock, less a deduction to cover the outlay which had been made for the surveys in the two States. The State government of Tennessee decided upon a similar course and appointed an agent to negotiate with the company for the purpose. The South Carolina stockholders of the Louisville, Cincinnati and Charleston appointed a committee to devise a scheme of reorganization. The report of this committee advised that all stockholders outside the State be permitted to withdraw, receiving repayment of their installments, except for a slight reduction per share to cover surveying expenses. Private stockholders in South Carolina were to be allowed to scale down their holdings on a basis of one-fifth reduction, with special arrangement for the very large stockholders. The State, which had subscribed for 6,000 shares, was petitioned not to reduce its holdings, but to encourage the work by continuing its liberal policy. All shares upon which the required installments were not paid by February 15, 1841, were to be declared absolutely forfeit. By the reorganization scheme the company expected to place its total resources at \$2,583,965, with liabilities, exclusive of the \$2,000,000 loan granted by the State, of \$1,969,660.48. The loan from the State was regarded as a permanent debt to be carried by the company. The resources exceeded the liabilities by \$614,304.52, and accordingly the committee did not think it would be necessary to call for more than seven additional installments of \$5 per share on the reduced number of shares, which would be sufficient for constructing the line to Columbia; the Southwestern Railroad Bank was subjected to a similar one-fifth reduction, and in 1843 the two roads were amalgamated and reincorporated under the name of the South Carolina Railroad Company.

The Hamburg Road felt the slowly rising tide of returning business. In 1842 the net income for the first half-year was \$59,428.47, while for the first half-year of 1843 it amounted to \$92,725.59, an increase of \$33,297.12. For the whole year the net profits of the Hamburg Railroad were \$140,686.55 and of the Columbia branch \$53,493.75.²

By 1845 directors of the road were beginning to work out some solution of the traffic problems. They adduced evidence to prove a statement the stockholders were slow to believe—that increase of business on the railroad did not necessarily cause a corresponding increase of current expenses if the company were properly prepared with locomotives and with the requisite number of cars to meet the business offered, and that a larger outlay judiciously made in the original construction of the road-bed and track might more than proportionally

¹*Niles' Register*, LVII, 67, Sept. 28, 1839.

²*Ibid.*, LXIV, 407, Aug. 26, 1843.

lessen the cost of maintenance. It was a time when even the simplest economic laws of transportation were imperfectly understood, and only those closest in touch with the practical side of the business knew whither developments were tending. The directors were continually trying to make the stockholders see the necessity of changes to increase the safety of the road-bed and track, but the majority holders were too interested in the extension of new branches to put any large outlay upon the original line until such action became absolutely imperative. The problem of special rates for special traffic was handled in several ways, at various times. At one period in the thirties, in order to encourage people to go shopping in Charleston, and for other purposes, it was provided that any one buying a one-way ticket should have the privilege of obtaining a return ticket, good for the same day only, without extra charge. For special occasions, such as conventions and camp-meetings, special rates were made and many thousand extra fares were collected by the road in consequence.¹

Freight charges were on a flat-rate scheme, and were the same to either Charleston or Hamburg, the units of measure varying with the articles. In the case of a few commodities special rates were made for carload lots, and there were somewhat lower rates for live-stock when more than one head was sent at a time, as well as for carload shipments. There was, however, very little attempt at detailed classification. Some curious items appear. Calves were charged at \$1, hogs by weight at 40 cents per 100 pounds, or if boxed and sent by passenger train at 12½ cents per foot, by measurement. In case of large quantities, special rates were made upon agreement with the superintendent of transportation. Some effort at development of low-grade traffic is seen, such as the following rates for marl: 5 cents per bushel for the first 10 miles and 1 cent for every 10 miles additional; bricks, \$2 per thousand for the first 10 miles and 50 cents for every 10 miles additional; wood, for the same hauls, \$1 per cord and 25 cents additional; spokes and staves, \$1.50 per thousand and 25 cents; shingles, 75 cents per thousand and 25 cents. Lumber in general went at the rate of \$1.50 per thousand for the first 10 miles, with 25 cents for each additional 10 miles. All goods of this class were to be loaded or unloaded by the owners, and the company did not undertake to notify consignors of the arrival of their goods. They were considered as delivered when they had reached the depot; but if not taken away were stored at the depot at owner's risk. Goods, wares, and produce,

¹"The great numbers which have visited our city from the interior of Georgia and South Carolina, within the few days which have elapsed since the reduction of railroad charges for travel, afford complete proof and illustration of the truth of these remarks. The reduced price of travel has crowded our hotels, filled our shops with retail purchasers, extended sales of wholesale merchants, while it has correspondingly increased the revenue of the road. Why then, should not this policy be continued? enlarging the circle of travel by the temptation of cheapness, and bringing the town and country into more intimate relations of business, of intelligent intercourse, and social communication." *Hunt's Merchants' Magazine*, XIX, 438, Oct. 1848, quoting the *Charleston Evening News*.

if consigned to the company's agent, were forwarded to their destination free of commissions. If intended for interior points in the Carolinas, Georgia, Tennessee, and Alabama, unless otherwise directed, goods would be dispatched by the first wagons offering for the place of destination. If for points on the Georgia Railroad, they were forwarded at once to the depot in Augusta, provision being made in all such cases for the transfer or forwarding by payment to the company's agent in Charleston, or the one by whom the goods were forwarded.¹

The diversion of resources to the building of the Camden branch largely accounts for the company's dilatoriness in replacing worn-out tracks and in building additional trackage to replace the inclined planes. The construction of the branch was begun in 1844 and finished in 1848, at a cost of about \$300,000. The directors were at first hopeful that the road could be financed by the sale of bonds, but as their efforts to procure funds in this way were unsuccessful,² they cut down operating expenses and used earnings to build the branch. The country had not yet recovered from the "cotton panic," and what interest there was in road-building was rather in east-and-west than in north-and-south roads. Still the Camden branch was needed for the connection to Raleigh and its system of lines in North Carolina. The road was earning almost \$600,000 by 1847, with its ordinary expenses averaging about 65 per cent of gross earnings.³ Dividends were paid up to 1848, however, when heavy bills for construction came due, and the directors were compelled to pass a regular semi-annual dividend. This caused a slump in the stock and loud complaints from the stockholders, who charged that the directors were utterly neglecting the main line for the sake of the Camden branch. A violent quarrel ensued, which, while not resulting in a reorganization, put an end to such methods of building branch roads and induced the directors to put more money into the main road itself.

In 1847 the partial completion of the Western and Atlantic gave a new stimulus to the South Carolina road. Practically no grain had reached Charleston by rail previous to this time, but in this year over 19,000 barrels of flour, 335,000 bushels of corn, and 4,000 bushels of wheat came down over the road from Hamburg. With this solid evidence of commercial utility presented, many schemes were advocated for the construction of railroads connecting the seaboard and the interior. The legislature was asked to assist, but there was too little agreement on any definite route to push the matter to a decision. The route considered most feasible was over the Louisville and Cincinnati survey, up the Broad River Valley, from Columbia by a common trunk-line to Charlotte, Greenville, and Spartanburg, and the people

¹*Hunt's Merchants' Magazine*, IX, 580-581, Dec. 1843. Freight rates on South Carolina roads.

²*Niles' Register*, LXIX, 108, Oct. 18, 1845; LXXII, 331, July 24, 1847.

³*Hunt's Merchant's Magazine*, XVII26, Oct. 4, 1847; XVIII, 100-101, Jan. 1848.

of the State were advised to unite on this route.¹ The prosperity of the road continued, even though there were fluctuations in the cotton crop from year to year. In 1848 the movement for better communication with the West culminated in the citizens of Charleston advocating the use of the city's credit to the amount of \$500,000 in aid of a road to Nashville. The people were beginning to realize the immense superiority of railroads over water communication and the vast possibilities in their development.² It was in this year that the Camden branch was finished. With the main road and the Columbia branch (finished in 1842) the road controlled 241 miles of track. In the 14 years of its operation its annual receipts had increased from \$166,559 to \$800,073; the number of passengers carried from 26,649 to 75,149; the number of bales of cotton carried from 24,567 to 274,364; and the number of miles run from 154,000 to 352,431.

The following year, 1849, in response to the demands of the stockholders, a new policy of road management was adopted. The directors called in the remaining installments due on the shares, relaid practically the whole track with heavy T-rail, improved the road-bed, and replaced the inclined planes. The chief source of trouble was the debt of \$2,000,000, the proceeds of which had in part gone as a bonus to the stockholders in the original South Carolina Canal and Railroad Company, and had in part been squandered between 1836 and 1840 in extravagant salaries and fruitless surveys. In 1851 the company was so far successful in its efforts as to be able to relay 58½ miles with new track, reduce its debt by nearly \$350,000, and still pay a semiannual dividend of 3 per cent.³ Connecting with the road at Columbia was the Greenville and Columbia, of which 53 miles were completed. It was planned to extend this road to Spartanburg.

There were several other roads or branches extending into North Carolina and destined to be finished within a few years. The Charlotte and South Carolina extended from Charlotte, North Carolina, to Columbia, about 110 miles. At Charlotte the road was to connect with the North Carolina Central and so gain an outlet to the North. The King's Mountain Road was a branch, extending from the Charlotte and South Carolina, at Chester, to Yorkville, about 25 miles. The Wilmington and Manchester, and the Laurens Road were also in the process of construction.⁴

The business of the South Carolina railroads appears to have increased slowly but steadily,⁵ with sundry efforts to better it by

¹DeBow's *Commercial Review*, V, 92, Jan. 1848.

²Hunt's *Merchants' Magazine*, XIX, 588, Dec. 1848; DeBow's *Commercial Review*, V, 529, May and June 1848.

³DeBow's *Commercial Review*, X, 467, April 1851; Hunt's *Merchants' Magazine*, XXII, 569, May 1850.

⁴Hunt's *Merchants' Magazine*, XXV, 241, Aug. 1851; DeBow's *Commercial Review*, XI, 330, Sept. 1851.

⁵"A Summary of Business of South Carolina Railroads," in *Ibid.*, XI, 153, Aug. 1851.

extending the market through improvement of the facilities for through routing. The citizens were interested in the routes northwest to Memphis and Nashville, and southwest to New Orleans and Mobile, and subscribed liberally to the stocks offered.

GEORGIA.

The Georgia system was far more effectively planned and efficiently administered than that of South Carolina. It seems to owe a large part of its success to the clever advertising of its chief promoter, James Camak. The main stem from Atlanta comprised a line to Augusta, with branches to Warrenton, Washington, and Athens. From Savannah the original line of the Central of Georgia extended to Macon. From Macon to Atlanta, from Macon to southwest Georgia, with a branch to Columbus and spurs to Milledgeville and Thomaston, were lines built by companies either heavily subsidized by the Central of Georgia or controlled in sympathy with it to such an extent that they formed practically one system with it. Both systems were planned and developed by business men of the cities chiefly concerned, in order to increase their markets.

There is a tradition that the Georgia Railroad's inception was due to the bogging of a steam-boiler in transit from Augusta to Athens by ox-team. The cotton-mills for which it was destined had to wait until the roads were dry, and so exasperated did its owners become that they began to investigate the project of a railroad to Augusta. Athens was a thriving, enterprising town, with ambition to become the trade center of Georgia, the Piedmont, and Eastern Tennessee, as the growth of settlement was forcing back the wholesale and jobbing trade. Savannah, long the chief market, was giving way to Augusta, through the transportation furnished by the Savannah River, and Athens thought a railroad would do the same service for her. At first the only suggestion was for a road from Augusta to Athens, a continuation of the South Carolina road. Augusta, fearing exactly the result which Athens hoped for, did not at first encourage the project; but development of Buffalo and Rochester, without damage to the older center, Albany, was pointed out, and gradually opposition died away.

In fact, Augusta gave little or no support to the project until its success was assured and the prospect of dividends made the stock attractive for private investment. The city council at a later time subscribed for 2,000 shares of the company's stock, with the proviso that the company's tracks should never be joined with those of the South Carolina Railroad unless with the city council's express consent. This was later a source of great inconvenience to the company, and it paid a round sum to secure the city's consent. The towns and districts lying around Athens were much more cordial in their support. They had, in fact, been urging railroad connections with the central cities for several years, by means of meetings and conventions. A company

to build a turnpike was organized in July 1833, with a capital of about \$350,000, but its charter was repealed in December of the same year along with the Eatonton Railroad charter of 1831, and a new charter was issued to the Georgia Railroad Company, a corporation with large powers and privileges, some limited, some perpetual.

The capital of \$1,500,000 was to be capable of indefinite enlargement by the company. Subscriptions for the stock were spread widely through the interested sections, a very far-sighted move, and were taken up rapidly in the various towns along the route. The subscription was opened on the first Monday in February 1834, and by the 15th of the same month \$500,000 of the stock had been subscribed, and the Athens commissioners called a meeting of the stockholders to organize the company.

The directorate was active and judicious. It sent a delegation into Greene and Morgan Counties and extended the list of subscribers. At the end of May the total subscription was not far short of the initial capital of \$1,500,000. President Camak sent a description of the route and the company's plans to the *American Railroad Journal* in July and thus introduced the project to the world at large. While a number of roads were contemplated, the one from Macon to Augusta was the only one in active consideration. This, with a length of 114 miles, was estimated to cost \$10,000 per mile, and the promoters prophesied a heavy rate of profit on the investment from the business to be opened up.

The directors at first tried to secure an engineer from the United States War Department. Unable to do this, they employed J. E. Thompson as chief engineer, who reported on his survey and estimates in January 1835. The directors then issued a call for installments of \$15 on each share, which was met promptly and silenced those who still doubted the success of the road. Bids were advertised for and received, and contracts let in sections of about a mile each for about 50 miles of the right-of-way. The work of grading proceeded slowly, however, both from the primitive methods in vogue and from the scarcity of labor. Third and fourth installments were called for, and in December 1835 the company, at the same time as the Central of Georgia, obtained banking privileges, and developed this side of its activities into an institution of great strength. The stock attracted investors and was sold rapidly. From its banking operations the company was able to declare a dividend on its stock and to continue its progress unhampered by any lack of funds. In May 1836, when the cashier made his first important report, the road was shown to be in an excellent condition. The first 10 miles of the road from Augusta were completed in January 1837, and 40 miles more the following May. By December 25, 1838, the road was opened from Augusta to Greensboro, a distance of 84 miles.¹

¹*Niles' Register*, LV, 224, Dec. 1, 1838.

The panic of 1837 hurt the Georgia Railroad and Banking Company less than most of the other roads in the cotton region, partly because of its sound and conservative management, and partly because its loss in interest and discount were more than offset by the reduction in the price of labor and the supplies which must be bought for the road. Contracts, in addition to the work on the main line, were already let for the road to Union Point, besides two contracts for sections of 7 and 4 miles on the Greensboro and Athens Road, and work was in progress on the spur to Warrenton. Bids were called also to cover construction of the road-bed both on the Madison and the Athens branches, so far as the company had acquired the right-of-way, but on account of the hard times these were not pushed. Before the end of 1837 lines of post-coaches had been established to cooperate with the railroad, and arrangements made for handling freight as well as passengers at the head of the road. A line of 4-horse coaches was running every alternate day from Athens and Gainesville by way of Washington, and another from Athens through Watkinsville and Greensboro. The company assumed the care of horses and vehicles of persons arriving at the head of the road on horseback or by private conveyance, pending the return of the owners from their trip to Augusta. A good deal of cotton was already being handled by the road.

Extensions, however, progressed slowly. The prevailing financial depression made stock unsalable, subscribers were slow in paying installments, and the bank competed with an advantage over the railroad for the use of the company's funds. The bank was yielding large profits, while the railroad promised them only after large outlay and after a period of waiting. The charter of 1835 required the completion of the "union railroad" within 4 years and the branches within 6 from the date of the charter. The completion was accomplished without much margin of time to spare, the track reaching Greensboro near the end of 1838, and both Madison and Athens in 1841. Much of the grading in 1839 and 1840 was paid for in stock, which the contractors consented to receive in part payment. Some of the contemplated branches were given up, or left to other roads, such as the line from Athens into Tennessee, which was given over to the Western and Atlantic.

The first locomotive ran from Augusta on May 13, 1837.¹ For several years, so long as the road ended at Athens, the freight was almost entirely local. Some little traffic came by way of western Georgia, and occasionally from Tennessee and Alabama. The greatest number of passengers carried was in 1838 and 1839, when the road reached little beyond Greensboro. As many as 28,000 persons were carried in that year, the traffic being doubtless stimulated by the novelty of the mode of travel.

¹*Niles' Register*, LII, 176, May 13, 1837.

The next year an attempt was made by the principal line of coaches to divert the southwestern passenger traffic to a route via Brunswick and Tallahassee to Mobile. This drew down the number of passengers to 22,632, and though a year later the coach-line returned to its connection with the railway, the financial depression kept down both the number of passengers and the freight receipts. In 1840 the annual report showed that, in spite of the hard times, the aggregate of business increased over the previous year in the amount of \$49,873.12, while the corresponding increase in expenditures amounted to only \$6,884.20. The net profit on the capital invested in that part of the road and in the machinery which was in use (about \$1,200,000) was estimated to be nearly 10 per cent. According to the report of the chief engineer¹ on

TABLE 52.—Statement of dividends declared on the stock of the Georgia Railroad and Banking Company, September 1847.

Date of dividend.	No. of dividend.	Capital stock.	Amount of dividend.	Per cent declared.
1836, November.....	1	\$858,615.00	\$26,018.00	..
1837, February.....	2	1,170,715.00	41,452.80	..
October.....	3	1,435,405.00	53,962.54	6.5
1838, April.....	4	1,910,215.00	70,412.90	..
October.....	5	2,011,805.00	80,300.96	7
1839, April.....	6	2,116,810.00	84,178.00	8
1840, January.....	7	2,143,317.00	86,234.68	..
April.....	8	3,193,952.00	86,513.48	8
1842, April.....	9	2,201,612.00	220,161.20	10
1845, January.....	10	2,288,449.92	45,768.88	..
October.....	11	2,289,199.92	45,783.99	2
1847, April.....	12	2,289,199.92	45,783.99	4.5

the whole investment, including some \$700,000 in the sections still in process of construction, the rate was about 6 per cent, in spite of the low rates of carriage and the general stagnation of business. In 1843 the gross receipts were \$250,000, with expenses \$112,000, leaving a net profit of \$139,000.² During the 6 years the road was in operation up to this time, the total receipts amounted to \$985,791 and the total expenses to \$475,595, yielding 6 per cent per annum on the entire capital expended. By 1847 the road had declared 12 dividends ranging from 10 per cent in 1842 to 2 per cent in 1846. The dividend policy from 1840 to 1846 was irregular, as shown by table 52, taken from *Hunt's Merchants' Magazine*. The passing of the dividends in 1843, 1844, and 1845 was a feature of the extension of the road, for very few shares were salable during the hard times. The earnings of the road and the proceeds of nearly \$700,000 in 7 per cent bonds were all devoted to building the road to Atlanta. The latter road was opened in September 1845. This made a connection between the systems of the Georgia Railroad and Banking Company and the Georgia Central.

¹*Niles' Register*, LVIII, 416, Aug. 29, 1840.

²*Ibid.*, LXIV, 96, April 8, 1843.

The Georgia Railroad made numerous subscriptions to promote the building of lines to the West which should act as feeders. Five such roads were aided, not as investments, but to bring business. Part of the capital remained unproductive for some years, but the rest brought good dividends and all of it tended to the benefit of the company through the increase of its remunerative traffic. The company's own branch lines—to Warrenton, Washington, and Athens—were not notably remunerative in themselves, but were profitable chiefly as feeders to the main line. The branch to Athens, of which so much had been expected in the early years, was especially disappointing. It had not much cotton to ship, and, while some grain and meat was sent down the road, the traffic would not bear charges heavy enough to yield much profit. In the original charter there had been a limit put on freight rates of 50 cents per hundredweight per 100 miles, and on passenger rates of 5 cents per mile. In the years to 1850 the up traffic was much the heavier, but with the development of feeders and through lines the down traffic increased far above the up or west-bound traffic.¹ Some of the stations shown in the reports had practically no business whatever, and from others business was very heavy, as Atlanta, Covington, and Athens. There was little or no classification of articles in the modern sense. Negroes were transported in "lots," and made a separate item in the reports. On the whole, the company was fortunate in the amount of local traffic which it obtained, being enabled from the first to maintain a very low ratio of operating expenses to gross earnings. In 1846 it was only 38 per cent lower than for any other road in the country, but in 1850–1860 the ratio rose steadily from 50 and 60 per cent to occasionally 75 per cent on account of the steadily rising cost of labor and supplies, while at the same time railroad rates were steadily declining. Passenger fares were reduced to 3 cents a mile in 1850, and as through traffic developed, freight rates were lowered again and again in order to increase it.

An analysis of receipts and expenses for the two years just previous to 1850 (table 53) shows an annual increase in income of 22 per cent and in net profits of 28 per cent, while expenses increased only 11.5 per cent. The management was careful and conservative, and on the whole the road satisfied its constituency and continued at a steady profit.

The Central of Georgia Road, as originally built, extended only from Savannah to Macon. The road from Macon to Atlanta, from Macon to Southwest Georgia, with the branch to Columbus, and the local spurs to Milledgeville and Thomaston, were built by separate companies. Most of these companies, however, were either heavily subsidized by the Central of Georgia subscriptions or controlled in sympathy with it to such a degree as to make them practically a part of its system from an early time. The movement towards a railroad

¹*Hunt's Merchants' Magazine*, XV, 511, Nov. 1846; XVII, 306–307, Sept. 1847.

from Savannah was a question from the early twenties, as an alternative for the waterway and turnpike plans, and it gradually reached concrete form as the feasibility of railroads was demonstrated in other parts of the world. At the beginning, Savannah was already enjoying a river communication with the Piedmont and was much less eager than Charleston or than Macon and the cotton district northward in discussing a possible railroad to tap the up-country. Savannah felt secure in the control of the Georgia trade, and not until Charleston began to encroach on her territory did Savannah begin to make business-like and successful efforts to keep it. For a few years after 1827 Savannah was interested in a canal to tap the Altamaha, but not much was accomplished. The town of Darien, near the mouth of the Altamaha, which wanted a railroad into the western half of the State, stirred up a good deal of discussion and made many plans which were afterwards used by Savannah.

TABLE 53.—*Analysis of expenses and receipts of Georgia Railroad, 1848-1849.*

	1848.	1849.	Increase.
Receipts:			
Passengers.....	\$157,694.67	\$166,484.04	\$8,789.37
Freight.....	280,486.27	376,957.07	96,470.80
U. S. mail and rents.....	38,871.74	38,573.48	¹ 298.26
Total.....	477,052.68	582,014.59	104,961.91
Expenditures:			
Conducting transportation...	44,318.25	49,895.90	5,577.65
Motive power.....	50,538.72	65,531.14	14,992.42
Maintenance of way.....	67,256.55	66,054.99	¹ 1,201.56
Maintenance of cars.....	13,439.32	14,300.85	861.50
Total.....	175,552.84	195,782.88	20,230.04
Net profits.....	301,499.84	386,231.71	84,731.87

¹Decrease.

In 1833, after the launching of the Charleston and Hamburg, both State pride and commercial interest caused Savannah to look into the railroad project. Railways were planned from Augusta to Savannah, from Macon to Savannah, and from various points on the Piedmont to Augusta and Macon, and companies for several of these purposes were chartered in December 1833, among them the Central of Georgia.¹ Some weeks before, the city council of Savannah, at the instance of a citizen's committee, voted the sum of \$500,000 in aid of the railroad or canal project. The charter of the Central of Georgia Railroad and Canal Company authorized the construction and operation of a canal or railway from Savannah to Macon, and vested promotive power in the city corporations of Savannah and Macon.

¹Georgia, *Digest of the Laws to 1837* (ed. by Prince), 300-304.

In January 1834 the Savannah council authorized the employment of an engineer to survey the route and pledged the city to meet a large part of the expenses connected therewith. Engineering difficulties were slight in the region over which the road was to pass, and expenses for grading were correspondingly slight. The total cost as estimated by the engineer was \$10,000 per mile, and the road, some 200 miles in length, would cost, with equipment, about \$2,200,000. Earnings, it was expected, would amount to from 10 to 17 per cent. The charter of 1833 authorized a capital stock of \$1,500,000 in shares of \$100 each and permitted the organization of the company when half of the amount had been subscribed. Savannah subscribed for 5,000 shares as previously agreed, and when the books were opened to the public, in June 1835, and individual subscriptions were made, the total was carried above the number of shares required for the organization of the company, but not to nearly enough to build the road. To make the stock more attractive to investors, banking privileges were secured in December 1835, the company securing an amended charter giving them banking privileges and doubling the amount of stock permitted. Additional private subscriptions were secured and the city of Macon finally took 2,500 shares.

At the same time the legislature authorized the building of the Western and Atlantic at State expense, an act which promised to both the Georgia companies a share in the rapidly growing western trade and so increased the probable earning capacity of the roads. Construction was begun towards the close of 1836; it was hindered somewhat by the crisis of 1837, but by May 1838 grading was completed for 67 miles from Savannah and the road was in operation for 26 miles of the distance. The right-of-way and timber for construction were in many cases given by the land-owners along the route, and Savannah gave a site for a station in the city; but so long as the road had not yet reached paying territory and dividends were accordingly distant, and cash at a premium on account of the financial stringency, the value of the stock was much lowered. During the latter part of the time labor was cheaper, and construction was correspondingly hastened.

By November 1839 the road was in use for over 100 miles of track and some business was being done. Passengers were transported by stage-coaches from the head of the road to Macon, 70 miles away. The amount of business transacted increased steadily, but the company could find no outlet for its bonds and construction came almost to a standstill. Freight was carried beyond the terminus by wagons owned by the company. A change in the administration came in 1840, and with it a change in the general railroad situation in the State. The contractors were induced to urge on the work, and the road was at last carried through to Macon in October 1843, after 7 years of work, at a cost of \$2,500,000 for the 190 miles, approximately

\$13,000 per mile. This was more than the estimates had called for, and in addition to the capital stock of \$2,000,000, there was a bonded and floating debt of over \$700,000. For the first 5 years after completion the road's earnings were precarious, but from 1848 it proved a solidly prosperous institution. At the same time it began a definite policy of promoting feeding-lines.

At about the time when the main lines of the Georgia Railroad and the Central of Georgia were under discussion, many of the smaller towns within the Piedmont were nursing railway schemes of their own, which later developed into feeders to the larger systems. Such were the Eatonton and Milledgeville roads (at first anxious for a connection with the Georgia, but later more interested in the Central) and the Monroe Railroad, chartered in 1833 and built as far as Forsyth by 1840. By the original charter this was the terminus of the road. It was 25 miles long, and when started was considered by its contemporaries as an extremely hazardous project, for there was no prospect of a railway either below Macon or above Forsyth.¹ When the Western and Atlantic and the Central Railroad were planned, the Monroe County Road was to be a link between them and thus make a continuous road from the Tennessee River to Savannah. It was an object of great interest to the part of Georgia through which it passed, but its early history is one of many vicissitudes.

All the settlers from Macon and Columbus to the Florida boundary were anxious for an outlet to the ocean, but there was little local capital that could be employed. The first charter lapsed through failure of sufficient stock subscriptions, but was renewed in 1835,² and the road was built to Forsyth by 1838.³ In 1836 State aid and banking privileges were given to the road, and permission was given also for the extension to connect with the Western and Atlantic. But the company was not wise in using its banking privileges and the State aid never materialized. When the great cotton crisis came, therefore, the company found itself with insufficient resources and in 1845 was forced into bankruptcy and sold at a price which barely covered the company's debts. The investment of the stockholders was an almost complete loss. Train operation was suspended for nearly a year, until a new company took over the road and rehabilitated it with new track and equipment.

In 1853 the Macon and Western Company had a good and thoroughly equipped road, with a small debt and under sound administration. The route, with the extensions beyond Forsyth to Atlanta, was 103 miles long. It was very prosperous, earning nearly \$300,000 gross, with net earnings at 50 per cent. Eight per cent dividends were easily paid. The road had become an important part of the

¹*Hunt's Merchants' Magazine*, XXI, 340, Sept. 1849.

²*Georgia, Digest of the Laws to 1837* (ed. by Prince), 314-318.

³*Southern Banner*, Dec. 22, 1838.

route for through traffic between the Northwest and the Southeast. Several short branches were built at about the same time as outlets for rich cotton districts, and were either subsidized or finally absorbed by the Central system. Such were the Thomaston and Barnesville, a petty line running from the Macon and Western, built as a separate road, later bankrupt; and the connection to West Point, La Grange, and Newran. All of these branches paid well and their stocks sold at a premium.¹

The first railroad project in southwestern Georgia was one of the many rosy dreams which mark the early history of railroad building. It began as a result of the agitation over the road from Darien in 1826. A charter was issued in 1827 to Thomas Spalding, giving him the right to build a railroad or dig a canal from the Ocmulgee to the Flint River. The route contemplated was from the Ocmulgee, at the Great Bend, 60 miles south of Macon, westward to Albany on the Flint. Not much progress was made until 1840, when a new company was formed and subscriptions to the amount of \$250,000 were secured, though these proved afterward to be of little use, as collections could not be made. The administration of the road was not such as to inspire the confidence of investors, and the road went to pieces after a little more than two-thirds of the grading was done and before a rail was laid upon it.

The real history of railroads in southwestern Georgia began in 1845, just as prosperity began to return to the cotton belt. A plan was set on foot to build a road from Macon to the Chattahoochee River, to connect with a road that was projected from Pensacola. Branches to Columbus and Albany were to be a part of the plan, and a liberal charter was granted by the State in December 1845. No subscribers to the capital stock were found, however, and a survey was made with funds borrowed from the Central of Georgia. The report showed that a road was not only feasible, but rather easy of construction, and as a result a few shares were subscribed, but not enough to renew work. The legislature reduced the amount of subscription required before organization from \$500,000 to \$200,000, and in 1847 the Central of Georgia promised a subscription of \$250,000 if an equal sum were subscribed along the route. The city council of Savannah subscribed \$250,000 in Central of Georgia stock as soon as the completion of the Southwestern Road was beyond contingency. The citizens of Macon were distinctly lukewarm on the subject, fearing that trade would be diminished by pushing the jobbing centers farther inland. Agents were sent out to secure stock subscriptions.

The road, which began at Macon and terminated at Fort Gaines, on the Chattahoochee River, was to be 150 miles in length and was expected to develop a most fertile and valuable new cotton-growing

¹*Hunt's Merchants' Magazine*, XXI, 243-244, Aug. 1849.

region in the South.¹ It was also to be part of a line of railroad from Savannah to Pensacola. The line would thus be a part of a route from New York to New Orleans. But in spite of the attractive prospect, few seemed inclined to invest, though enough subscriptions were obtained to legalize the organization of the company. Grading was immediately begun by contractors who were also large stockholders in the company, and construction proceeded with fair speed until the middle of 1850, when it was hampered by a general rise in wages and a scarcity of labor.

Meanwhile the city of Savannah, at the request of the company, reduced its aid to \$150,000, to be paid in 7 per cent bonds, and a bill was introduced to secure a State subscription of \$500,000. The bill was defeated, however, and the road sought other means to sell its stock, refusing for some time to use loans. By July 1852 the road was completed to the west bank of the Flint River, a distance of 53 miles, at a cost of \$13,442 per mile.

The directorate resolved to nurse the enterprise of extending the road by branches which would naturally be directed towards the localities from which the greatest financial assistance should come. The capital stock of the company, in February 1852, consisted of 5,563 shares of \$100 par and paid-up value. Of these 81 shares were held outside of Georgia. Corporations and persons in Savannah held 4,289. A total of 505 shares were held by contractors, and in southwest Georgia, the region most largely benefited by the road, 688 shares were held. Less than one-seventh of the total amount of over \$700,000 had been contributed by the planters. In the further extensions and branches, however, the proportions from these localities were larger. In 1852-53, the citizens of Americus and vicinity subscribed and paid for \$75,000 in stock to secure an extension to their towns costing about \$125,000 in addition to that amount, and soon afterward the people about Albany took like measures to bring a road to their town. The policy of requiring local subscriptions became successful after the company had built up its main line mostly with resources contributed by Savannah and the Central of Georgia Railroad.

The Southwestern Company, in the half-year ending February 1, 1851, earned \$76,536 gross and \$49,609 net; in the year following \$129,395 gross and enough net to permit a dividend of 8 per cent. In 1852-53 the gross earnings were \$140,008 and net \$76,807. The company then had a bonded debt of \$100,000, and later increased this in extending its road.

Closely connected with the Southwestern Railroad, being fostered and partly built by this road, was the Muscogee Railroad, which branched from the Southwestern at Fort Valley and ran to Columbus.

¹*DeBow's Commercial Review*, VII, 334, Oct. 1849.

Columbus was one of the natural trade-centers, situated on the fall-line of the Chattahoochee, and soon acquired a thriving commerce, and also some importance as a manufacturing town, through the use of its large water-power. The Western and Atlantic law of 1836 designated Columbus as one of the towns which the State would aid in connecting by railroad with the Western and Atlantic, and the Chattahoochee Railroad and Banking Company was chartered in 1837. The Columbus city council subscribed \$750,000 in bonds for a loan to the company, but not enough stock was taken to meet the conditions. Later the city council changed its ordinance to permit a stock subscription of \$200,000, but the company was among those struck by the panic of 1837, and all the plans for a railroad were abandoned. Nothing more was done until 1845, when the city sent a committee to Macon to confer with the Central of Georgia Railroad Company about building a road from Columbus to Barnesville on the Macon and Western. The Central proposed instead a connection with the Southwestern at Fort Valley. Accordingly the Muscogee Railroad, chartered in 1845, was empowered to build eastward from Columbus in the expectation of connecting with the Southwestern, but little was done until 1847, when the prospect of a rival road from Macon or Barnesville to West Point roused the Columbus city council again and \$150,000 was subscribed to the stock of the Muscogee Company. The latter pushed its construction as fast as it could in the next few years, but could not obtain money enough to go as far as Fort Valley. Then the Southwestern Company took over the eastern half of the route and built a track to meet that of the Muscogee Company; later this company absorbed the whole road.

Milledgeville, the commercial collecting and distributing point at the fall-line of the Oconee, and also the capital of the State, wanted a connection with the Georgia Central from Gordon, on the Savannah line, but political conditions which hampered the growth and progress of the community also hampered the road, and though a charter was granted in 1837, the company was not organized until the late forties. Construction began in 1850. The Central of Georgia promoted the work by furnishing the new company with the plate-rails from the Central's original track, now being replaced with T-rail, and in payment accepting the Milledgeville Company's stock. Eatonton, by a similar assistance, formed a company to connect with and continue the Milledgeville. These two small companies were soon merged, and in 1855 became part of the Central of Georgia. A project to build an extension of the Eatonton line towards Monticello was opposed by the secret influence of the Georgia Railroad Company, which feared a diversion of its traffic, and the plan was given up.

Another branch, called the Waynesboro Road, was built to Augusta, in the years from 1847 to 1854. It was first projected in the middle

thirties. In 1839 a meeting of the citizens of Augusta passed resolutions to the effect that a close commercial union between the cities of Savannah and Augusta would promote the prosperity of those cities and the State. They advocated a road from Augusta to the

TABLE 54.—*The Central of Georgia Railroad.*

	Passen- gers.	Passage money.	Freight and U. S. mail.	Total earnings.	Total same period last year.
1844 December.....	1,206	\$4,576.28	\$30,310.46	\$34,886.74	\$31,253.63
1845 January.....	1,345	4,755.05	26,660.16	31,415.21	29,758.47
February.....	1,041	4,649.75	32,137.65	36,787.40	25,704.62
March.....	1,138	5,351.13	33,897.46	39,248.59	25,867.86
April.....	1,179	4,891.50	27,795.44	32,686.94	17,676.87
May.....	1,402	5,673.00	27,639.23	33,312.23	20,092.59
June.....	1,144	4,379.00	9,523.49	13,902.49	10,808.00
July.....	1,153	4,707.98	18,821.10	23,529.08	12,103.64
August.....	787	3,953.86	12,985.37	16,939.23	18,181.36
September.....	1,132	4,770.95	25,409.58	30,108.53	35,410.90
October.....	1,624	6,820.87	35,219.14	42,040.01	50,962.72
November.....	1,480	5,580.74	27,941.56	33,522.30	50,603.31
Total.....	14,631	60,110.11	308,340.64	368,378.75	328,423.97

Earnings for 1845 exceed those for 1844 by \$40,026.74, being increase of 12.5 per cent. Total number bales cotton transported last year was 114,641, and for year previous 77,437, being increase of 37,204, or about 50 per cent.

Total receipts for year ending Nov. 30, 1845.....	\$368,450.75
Total expenses for year of maintaining and working road.....	186,886.39
Total net earnings, 1845.....	181,564.36

DEBT OF COMPANY.

Circulation.....	\$42,791.00
Road tickets.....	7,735.15
Deposits.....	25,048.39
Due to other banks.....	106.29
Unclaimed dividends.....	4,342.60
Bills payable.....	135,903.20
Railroad bonds.....	440,097.00
Certificates to banks.....	13,311.00
Total, Nov. 30, 1845.....	669,334.63
Resources, independent of railroad and appurtenances.....	239,223.71
Liabilities over and above assets, Nov. 30, 1845.....	430,110.92

Figures are given as printed in *De Bow's Commercial Review*, I, 176, Feb. 1846.

line of the Central. There were no immediate developments, because of the cotton crisis that put a stop to all railroad schemes for the time being. Afterwards the Georgia Railroad and some of the Augusta business men opposed it as probably dangerous to the interests of that city. The people along the route, in Burke County, and especially in Waynesboro, and the Central of Georgia Company, wanted the branch built. The railroad company took the lead in 1846, when the directors proposed to the Georgia Railroad Company that the

two corporations should join in offering a guarantee of 7 per cent on the stock of the contemplated road, provided its cost should not exceed \$550,000. The stockholders indorsed the proposal, but the citizens of Augusta did not. In 1847 the city of Savannah subscribed \$60,000 to the stock of the Waynesboro Road, the Central subscribed \$100,000, and individuals in Savannah and along the route subscribed enough to secure its construction. The road, 54 miles in length from Millen on the Central to Augusta, was completed in 1854, and was at once taken over by the Central of Georgia Company on lease, at \$73,000 a year.

Excepting the road from Macon to Atlanta, all the feeding-lines of the road were greatly assisted by the Central of Georgia Company, and were controlled from the outset in close sympathy, being in several cases leased by it immediately upon completion. In later times all of them, including the Macon and Western, were absorbed by the Central of Georgia, either by amalgamation of stocks or by perpetual lease. In 1845 the road was very prosperous and began to push its policy of extension by subsidizing tributary lines.

The company became widely known for its large resources and for its extensive policy of promoting feeding-lines. In 1848 the Nashville and Chattanooga Company and the Hiwassee Company—both engaged in building lines to connect with the Western and Atlantic, and thus to feed the Central of Georgia—applied to the latter for a subscription to their stock. The Nashville and Chattanooga application for \$250,000 roused so much opposition that the question was postponed and never brought to an issue. The road was too far distant from the Central to take precedence of more immediate needs. In the case of the Hiwassee Road, the directorate refused a subscription, but granted a 20 per cent reduction in the freight charges on the rails to be carried to the road, a reduction not burdensome to the Central, since up-bound freight was always light and the expense small. The completion of the Western and Atlantic and the opening of routes in Tennessee added heavily to the volume of traffic. The latter road, extending from Atlanta to Chattanooga, was important both for its position in the railway system from the Northwest to the eastern cotton belt and as an example in American experience of a State-owned and operated railway. Various plans were proposed for the accomplishment of the scheme for a trans-mountain railroad from 1826 onward. With the abandonment of the Cincinnati and Charleston project in 1836, the Georgia delegates returned home and made plans for an independent system.

Inspired by the more or less secret influence of three railroad companies—the Georgia, Central of Georgia, and Monroe—a convention was held at Macon in November 1836, with delegates from various counties and railroads. A plan was made for a road with a single

trunk 130 miles in length, continued in four branches, one to meet the Georgia Railroad, one to Milledgeville, one to the Monroe Road at Forsyth, and one to Columbus. The terminus on the Tennessee River was to be Ross's Landing, now Chattanooga. The main line, from the Tennessee to the Chattahoochee, was perfectly feasible for a heavy-traffic railroad, and it was recommended that this be built entirely at State expense as a State road; the branches to be built by private joint-stock companies aided by the State.

According to this plan of the convention, a bill was presented to the legislature, but, in spite of its strong support, was only carried after a determined struggle. Nearly all of the cotton belt, which was making an urgent demand for foodstuffs, was in favor of the bill. By means of various devices the opposition was overcome sufficiently to pass the measure. Funds were provided to the extent of \$350,000 per year, with additional clauses providing for State subscriptions, not to exceed \$200,000 in any one case, to aid in building branch roads to the several towns named. This was in December 1836. A year later an increased provision of funds was made by authorizing the sale of State bonds up to \$500,000 in any one year.

In 1838 an appropriation of \$1,500,000 in State bonds, to run for 30 years at 6 per cent, supplemented and superseded the earlier provision.¹ A total of \$1,070,148 was obtained by sale of these bonds.² Up to 1839 funds for the road were not hard to obtain, because the Central Bank of Georgia, practically a State bank, was a sort of banking adjunct to the State treasury, but by being kept nominally separate evaded the provision of the Federal Constitution forbidding a State to issue bills of credit.

The policy of the bank was checked by the panic of 1839 and the road began to suffer for funds. The first issue of \$500,000 in State bonds for use by the road had proved salable in the market, and of the \$1,500,000 authorized in 1838 about \$300,000 worth were sold at par early the next year to the Bank of Augusta. An effort was made to sell some of this in New York and abroad, but the state of the money market was so bad that the sale could not be made without disastrous results. Fortunately the contractors at work on the road, because of the dearth of other opportunities for employment, preferred to keep at work and to accept payment in the unsalable scrip of the State. This condition, however, lasted only until the spring of 1842, when the price of State scrip went so low that the contractors were forced to suspend work.

Under the act of 1836 the surveys had been pushed rapidly, and by 1838 over 100 miles were under construction and over 2,000 men were at work. It was expected that the first 100 miles would be

¹Alexander, "Western and Atlantic Railroad," in *Atlanta Journal*, March 25, April 29, 1906.

²*Niles' Register*, LVII, 202, Nov. 23, 1839.

completed by the autumn of 1839 and that the whole route of 138 miles would be ready for the rails in the first half of 1840.¹ In some sections, however, cuts and fills were exceedingly heavy, and some cuts through rock formations were necessarily slow and expensive. When work was suspended in 1842 contracts had been let for the whole distance, with one important exception, which was to include a tunnel a quarter of a mile in length, the only tunnel on the route.² On the whole the delay in the progress of the road was not so much a matter of regret as it might have been. The depression of credit stopped work on all the connecting roads as well as on the Western and Atlantic. None of the routes from the east had reached within 60 miles of the beginning of the Western and Atlantic, and it would have been an extravagance to haul rails and rolling-stock over the wretched country roads to the isolated State railway, which, if built, would begin on a vacant hill-top and run through ravines and forests to no terminus of consequence.

The completion of the road-bed without laying the superstructure would have entailed a loss through the washing of the soil in the cuts and fills, and the company was in too precarious a state financially to buy rails. In February 1841 the commission advised that the lower 52 miles of the route alone be prepared for the superstructure and that work on the northern part of the route be postponed and, as soon as one of the railways from Macon or Augusta should reach the connecting-point, the superstructure should be laid and the road put in operation for that distance. The commission recommended that meanwhile the State should give financial aid to the company's roads, in order to enable them to reach the Western and Atlantic.³ This was not carried out, but the legislature replaced the commission with a disbursing agent, under whose orders the road was carried slowly to completion for the lower distance of 52 miles.⁴ The laying of the iron was in progress from 1843 to 1845, and thereafter the road was very gradually extended through the application of the net earnings from its operation.⁵ There was some slight prospect of active resumption of work on the road over the whole distance in 1842,⁶ and in 1844 a resolution was passed in the legislature to continue the road into the interior and a suggestion was made that convicts should be employed in its construction.⁷

In 1847 active work was again begun, and the road was finished to Chattanooga in 1851. In 1848, \$80,000 was appropriated to expedite its completion.⁸ The aggregate cost of the road up to the

¹*Niles' Register*, LVII, 202, Nov. 23, 1839; *Southern Recorder*, Aug. 27, 1839.

²*Southern Banner*, Dec. 21, 1839.

³Report of Western and Atlantic Commission, in *Southern Banner*, March 2, 1841.

⁴*Southern Recorder*, Nov. 2, 1841; Georgia, *Digest of Laws* (ed. by Cobb), 411.

⁵*Federal Union*, Oct. 24, Nov. 21, 1843.

⁶*Niles' Register*, LXIII, 264, Dec. 24, 1842.

⁷*Ibid.*, LXV, 327 Jan. 20, 1844.

⁸*Ibid.*, LXXV, 62, Jan. 24, 1849.

resumption of work in 1847 was \$3,305,165.88. For the same year the operating expenses of the road were \$51,676.93 and its total receipts \$89,483.86, leaving as profits \$37,806.93.¹ In this year the connection with Atlanta was made at Dalton, over a distance of 100 miles, thus making it economically practicable for the Western and Atlantic to resume construction toward Chattanooga, since the all-rail connection with the seaboard was accomplished and the profits from transportation were coming in to enable the road to secure funds for its extensions.

TABLE 55.—*Rates on Western and Atlantic Railroad from Atlanta to Dalton, 100 miles, put in force on the opening of the road to Dalton, in 1847.*

Place.	Miles.	Fares.	Place.	Miles.	Fares.
Atlanta to—			Atlanta to—		
Boltonville.	8	\$0.50	Hamilton.	55	\$2.75
Marietta.	20	1.00	Kingston.	60	3.00
Noonday.	25	1.25	Adairsville.	70	3.50
Acworth.	35	1.75	Oothcaloga.	80	4.00
Allatoona.	40	2.00	Resaca.	85	4.25
Cartersville.	50	2.50	Dalton.	100	5.00

Iron, 15 cents per 100 pounds, through; lumber, \$1 per M for first 10 miles and 25 cents for every additional 10 miles; corn and grain, 8 cents per bushel; heavy merchandise, such as sugar, salt, and butter, 25 cents per 100 pounds; dry-goods, 40 cents per 100 pounds; light and bulky merchandise, 8 cents per foot, through; no parcels carried on road for less than 25 cents; horses, through, \$5; two-wheeled carriages, \$3; four-wheeled carriages, \$6; special engine and 1 car, \$75.

During the whole period from 1839 to 1850 the question of the State road was often actively under discussion. One party demanded the early completion of the road, another thought the State could better afford the dead loss of abandoning the road rather than to invest more funds in a way that could only injure the Commonwealth by bringing in cheap foodstuffs, increasing the dependence upon cotton, subjecting the people to damaging competition, and ruining their happy isolation. It was also contended that governments should not undertake such enterprises, because they could always be accomplished more rapidly and more economically by individuals. In 1841 and 1843 acts were passed providing for the road's very gradual extension. In 1843 an act was passed authorizing the governor to sell the road, if he could get \$1,000,000 for it as it stood. This provision remained in effect for 7 years without a purchaser appearing. During 1847, however, State bonds to a maximum of \$375,000 were issued in order to complete the road, and the work went on to its conclusion at that time.

At about the same time that the road from Atlanta reached the Western and Atlantic, the Central of Georgia also made its western connection and a branch was soon after carried to Rome, where it

¹*Hunt's Merchants' Magazine*, XVIII, 96, Jan. 1848.

drew the trade of the Coosa River Valley. In 1848 the Nashville and Chattanooga was organized and construction contracts were let.

For the first few years of its operation, the State road was not very profitable, and aroused anew the opposition to its existence. The nominal net earnings rose above \$200,000 in 1852-53, and did not fall below \$400,000 between 1854 and 1861. Little of this net earning was, however, available for the State, since owing to the bad quality of the rails used in the original construction, it was necessary to remake the track as soon as possible. By 1858 this reconstruction expense had nearly all been met and the State treasury received over \$400,000 a year from the road, which put an end to the opposition to State ownership.

A more vital problem was that of freight rates. Here the crux was in the question whose interests the State road ought to serve. Inevitably such a situation would arise where the Commonwealth both owned and used the road. Ought rates to be high for the sake of large returns to the treasury, or low to benefit the citizens who were consumers of western produce? Ought local rates to be on the lowest basis, so as to increase the prosperity along the route of the road in Georgia, or ought the through rates to be at the minimum so as to attract business from a distance and cheapen the food-supply throughout the cotton belt? Other arguments were that the rates on goods for transfer to the connecting lines in Georgia should be on a reduced basis for the benefit of established towns like Macon and Augusta, and still others that the tariff should be absolutely uniform and thus promote the growth of a distributing center of food-supplies for the cotton belt at the Western and Atlantic terminus.

Fortunately for the sake of tranquillity, the fixing of rates was not attempted by the legislature. The actual policy was based on a few substantial principles: the road ought to yield a reasonable return upon the investment; it ought to subserve the special interests of the people along the route when they did not conflict with those of the State at large, but in case of such conflict the larger interest ought to prevail. These doctrines were difficult to apply in concrete cases, and in point of fact freight rates were altered with some frequency to meet popular clamor.

The fact that the road was for a period incomplete and operated for strictly local business caused the rise of local enterprises, which shortly led to vigorous demands on the ground of vested interests. An instance of this was the growing of wheat and corn along the route, which yielded large returns so long as the road was unfinished, but thereafter was embarrassed by the western competition. Another was the phenomenal growth at the southern end of the road of a town called at first Terminus, then Marthasville, then Atlanta. The grain-raisers objected to any reduction of rates for western cereals,

while Atlanta objected to any tariff which would encourage shippers to send carloads past the depot unbroken. At times these protests were effective.

In November 1855 a rule was put in force that all down traffic on the Western and Atlantic should bear the same charges, whether bound for Atlanta or points below.¹ At the same time the rates on corn were fixed on a strictly distance basis; the road was laid off into seven divisions of distance, and the rate for corn in sacks put at 5 cents per bushel for the first unit of distance, 6 cents for the second, 7 cents for the third, and so on up to 11 cents for the whole length of the road; in other words, a zone tariff.² The rate was figured on a basis of 4 cents for terminal charges and 1 cent for carriage over each unit of distance. As early as 1854-55 the receipts from through freights had amounted to \$394,457.27, just four times the \$98,922.67 earned from local freights. When later the road came under new management and began to compete for still greater through tonnage, which had formerly gone to the eastern roads or by western waterways, the through rate on corn, for example, was cut to 7 cents, and in general the principle was introduced of charging what the traffic would bear.

By 1850 distinct classifications as bases of rates appear in the advertisements and reports of the Georgia roads. Two chief divisions are found—goods by measurement and goods by weight. The rate from Savannah to Macon on the Central of Georgia, 191 miles, was, for “measurement goods,” *i. e.*, boxes, hats, bonnets, furniture, shoes, saddlery, dry-goods, and “other articles clearly analogous,” which formed the first class, 13 cents per cubic foot, and from Macon to Atlanta, 101 miles, 9 cents—a lower rate, proportionally, for the longer distance. From Atlanta to Dalton, 100 miles, the rates were 8 cents per cubic foot for the same class of goods. Over the Georgia Road, from Charleston to Dalton, a distance of 400 miles, the rate for boxes of hats, bonnets, and furniture was 28 cents per cubic foot, showing the effect, probably, of a “long-haul” rate.³ In 1851 the general rate on weight goods was 50 cents per 100 pounds from Savannah to Macon, and for goods shipped by measurement 13 cents per cubic foot. There were also special commodity rates, as iron, in the form of pigs or bars, castings for mills, or unboxed machinery, at 40 cents per 100 pounds. Hogsheads or pipes of liquor, containing not over 120 gallons, were charged \$5 per hogshead; hogsheads of molasses and oil went at \$6. Barrels of other liquid had a general rate of \$1.50 per barrel; barrels whose contents were dry, except lime, 80 cents per barrel. A study of the various rates in force shows the beginning of basing theories as to commodity rates, classifications of

¹*Atlanta Intelligencer*, Nov. 8, 1855.

²*Ibid.*, Oct. 19, 1855.

³*Hunt's Merchants' Magazine*, XXIII, 222, Aug. 1850; see also Table on freight rates in Georgia, p. 481.

various sorts, and distance rates. No distinction was made between carload and broken lots and the tendency to "charge what the traffic will bear" is in evidence. On the whole the rates over the Western and Atlantic, the State-owned road, appear very slightly lower than on the private roads.¹

Tables 56 and 57 show the mileage of the Georgia railroad and the financial condition of the Georgia Railroad and Banking Company.

TABLE 56.—Mileage of the Georgia Railroads.²

	Miles.
1. Central, from Savannah to Macon, completed.....	191
2. Georgia, from Augusta to Atlanta, completed.....	171
3. Macon and Western, from Macon to Atlanta.....	101
4. Western and Atlantic, from Atlanta to Chattanooga.....	140
5. South Western from Macon to Oglethorpe, nearly completed.....	51
6. Muscogee, from Columbus to Fort Valley, on South Western, in progress.....	71
7. Atlanta and West Point, from Atlanta to West Point, in progress.....	85
8. Milledgeville, from Gordon to Milledgeville, in progress.....	18
9. Eatonton, from Milledgeville to Eatonton, in progress.....	22
10. Wilkes, from Double Wells to Washington, in progress.....	18
11. Athens Branch, from Union Point to Athens, completed.....	39
12. Burke, from 80-mile station on Central Railroad to Augusta, in progress.....	56
13. Rome Branch, completed.....	17
Total.....	980

Hiwassee Branch Railroad, sometimes called East Tennessee and Georgia Railroad, from Dalton to Hiwassee River, extends for over 20 miles in Georgia.

Table 57 is from a report of the board of directors of the Georgia Railroad and Banking Company, and shows the business and financial condition of the road for the year ending November 30, 1853.³

TABLE 57.—Business and financial condition of the Georgia Railroad and Banking Company for the year ending November 30, 1853.

Entire cash payments on account earnings of bank and road for year as follows:	
From road.....	\$910,906.82
From bank.....	75,167.02
	<u>\$986,073.84</u>
Entire cash payments throughout have been as follows:	
Current railroad expenditures.....	407,733.64
Current bank expenditures.....	13,805.24
For dividends (rate 8 per cent).....	28,927.33
For interest.....	279,869.50
	<u>730,335.71</u>
Leaving surplus of.....	<u>255,738.13</u>
Surplus disposed of as follows:	
Carried to cost of railroad.....	200,000.00
Carried to reserve fund.....	55,738.95
	<u>255,738.13</u>
Amount of credit of reserve fund this day.....	<u>322,398.95</u>
There has been paid into bank from earnings of road, to November 30, 1853.....	
	850,339.83
Leaving uncollected.....	66,742.51
	<u>917,082.34</u>

This company has had charge of Eatonton Railroad since April 1, 1853, at an annual rent of \$14,000. They have also had charge of the Milledgeville and Gordon Railroad since April 1, 1853, at like rental of \$14,000. No payment has yet been made on account of hire of these roads.

¹See p. 481 for freight rates on Georgia roads. ²*DeBow's Commercial Review*, X, 382, April 1851.

³*Hunt's Merchants' Magazine*, XXX, 506, April 1854.

In 1846 there were 442 miles of railroad completed in the State of Georgia.¹ Five years later, in 1851, there were 659 miles in active operation, and over 200 miles more in process of construction. After a long period of disaster and lack of public confidence resulting therefrom, the railroads of the State were beginning to reap the reward of the really careful management which had in general been expended on them. The opening of the Western and Atlantic, as the final link in the chain of roads connecting the Atlantic seaboard with the Ohio Valley, with its great tunnel through the Blue Ridge, 1,477 feet long, was attended with imposing ceremonies, on November 1, 1849.² It had cost \$4,000,000, roughly \$28,500 per mile. The first year of its operation its receipts amounted to \$132,106, with expenses of \$82,519, leaving a net income of \$49,587. The total business of the Georgia roads was well over \$1,000,000 for that year.³ The era of prosperity had begun and the roads were realizing from 8 to 16 per cent profits per annum.⁴ Only Massachusetts had more miles of railroad than Georgia, possessing 1,042 miles to Georgia's 960 miles, including those in progress and near completion.

VIRGINIA.

The Staunton and Potomac Railroad was chartered by the Virginia legislature in 1831, being the first chartered in the State. The chartering of this road and of the Petersburg and Roanoke, in the same year, caused a bitter political controversy between the States' rights men and the supporters of the Federal Government, so that a provision was put in the Staunton and Potomac charter to the effect that, if the road received any subscription from the United States Government, all rights under the charter should be forfeited. A similar provision in the charter of the Petersburg and Roanoke was defeated.⁵ There was a good deal of railroad-building talk in this legislature, especially about a road intended to connect the Potomac River with the Ohio. The legislature was asked for an appropriation of \$125,000⁶ to build the road, this being proposed as a better investment for the State's money than the Petersburg Road, but no appropriation was made. The charter of this road contained many peculiar provisions, owing to the factional fight that went on over its construction. Moreover, there was considerable objection on general principles to the construction of railroads within the State. A few of the more far-seeing realized the advantage that would accrue, but a large number allowed their conservatism and prejudice against any form of "business" to blind them. The charter provided that no court in the State should by injunction stop the progress of the road. Maximum tolls were prescribed and all parts of the enabling act and

¹*DeBow's Commercial Review*, I, 278-279, March 1846.

²*Hunt's Merchants' Magazine*, XXI, 684, Dec. 1849.

³*Ibid.*, XXII, 565, May 1850.

⁴*Ibid.*, XXIV, 382, March 1851.

⁵*Niles' Register*, XL, 58-59, March 26, 1831.

⁶*Ibid.*, 74, April 2, 1831.

the consequent organization of the company were declared to be under the direct control of the legislature, except as regards the maximum rate of fare.¹

After this time the "internal improvements" sympathizers seemed to gain the upper hand, since railroads and other public works were granted State aid, sometimes very freely, and no such restrictions were imposed as in the case of the Petersburg and Roanoke. This road, chartered in 1831, was opened for 30 miles, from Petersburg to Weldon on the Roanoke, the next year (1832). The trip occupied 1 hour and 45 minutes, with a 25-minute stop for food and water. The directors declared that the trip could easily have been made in 1 hour "had it been thought prudent to proceed at so great a velocity."²

The Winchester and Potomac, placed under construction in 1833, was finished in 1836 between that city and Harper's Ferry on the Potomac.³ In the same year an effort was made in Richmond to promote a road to Lynchburg. Some success towards a preliminary survey was made, but it fell through, and the connection via the Richmond and Danville was not made until after 1850.

In 1837 over \$4,500,000 were appropriated towards internal improvements. Nine railroads or railroad projects were among those that shared in the State's bounty—the Richmond and Petersburg, with \$200,000; the Louisa Road with \$120,000; the Portsmouth and Roanoke, \$50,000; the Roanoke, Danville and Junction, \$320,000; the Falmouth and Alexandria, \$400,000; the Lynchburg and Tennessee, \$200,000; the City Point, \$60,000; and the Baltimore and Ohio, \$302,000.⁴ The same year two roads were opened to travel, the Richmond, Fredericksburg and Potomac and the Portsmouth and Roanoke, in the southeastern section; and the Richmond and Petersburg was nearly completed.⁵ In 1838 this latter road, with the Louisa Road from Richmond to Louisa and Charlottesville, a distance of 39 miles, and the Greensville and Roanoke, were opened.⁶ From this time until the great revival in 1850–1860, Virginia's energies were devoted mainly to the James River and Great Kanawha Canal project and to rebuilding and improving the roads already constructed. Some new roads were begun, notably the connection with the Baltimore and Ohio from Fredericksburg to Washington, the Lynchburg Road, and the Richmond and Danville, which was later extended into North Carolina.

Of these classes of activity the connection of the Richmond and Fredericksburg with the Potomac was finished in July 1842,⁷ and the relaying of the Petersburg Railroad with iron was completed in 1843.

¹ *Niles' Register*, XL, 340, July 16, 1831.

² *Ibid.*, XLIII, 241, Dec. 8, 1832.

³ *Ibid.*, L, 51, March 26, 1836; 123, April 16, 1836.

⁴ *Ibid.*, LII, 115, April 22, 1837.

⁵ *Ibid.*, LIII, 195, Nov. 25, 1837.

⁶ *DeBow's Commercial Review*, X, 577, May 1851.

⁷ *Niles' Register*, LXII, 344, July 30, 1842.

The latter road was declared to be then exceptionally safe and well-built. In 1844 a writer in the *Richmond Compiler* said:

"The experience of 14 years we have had in use of railroads . . . has taught us three important lessons: (1) That their cost, provided with requisite depot facilities and power, is greater; (2) that their cost of maintenance or keeping the road itself in order, is greater than was formerly estimated; (3) that when constructed and properly furnished, they are capable of accommodating larger business, and of transporting at so small an expense as to be able, by low charges, to attract more business than was deemed possible at an early period in their history. But for this last fact, developed entirely during the period above mentioned, or, it might be said, within the last eight years, all railroads in Virginia, except shorter roads for local transportation, would have been utterly profitless, and perhaps ruinous concerns."¹

Virginia was not as enthusiastic over railways as her two southerly neighbors, South Carolina and Georgia. Tradition has ascribed this attitude to her aristocratic and ultraconservative ideas, in accordance with which the residents of the State did not want the influx of strangers that would follow the building of more roads and the increase of trade and industry. On the other hand, the interests of the State were deeply involved in the James River and Kanawha Canal project. To many who must have been considered the most sagacious and astute business men of the day it seemed preposterous to abandon the completion of such a work, especially when railroads apparently showed such low returns on the money invested in them. The prestige of the great name of Washington was behind the canal, and with that were associated other names of Virginia's mighty men at the beginning of the nineteenth century, as Chief Justice Marshall and Colonel Breckenridge. There were sporadic attempts to organize railroads to supplement the canal, sometimes indeed to supplant it, but without local interest and stock subscriptions the roads never went beyond their paper charters. In 1845 a writer pointed out the great need of a road from Virginia to Guyandotte on the Ohio River at the mouth of the Big Sandy,² to develop and open up the State, and in the early part of the following year a bill to incorporate the Richmond and Ohio actually became law.³ Another bill at the same time, which was intended to extend the Baltimore and Ohio through Virginia, was indefinitely postponed, but was revived and passed after a hard fight two weeks later.⁴

In 1846 a writer in *Hunt's Merchants' Magazine* reviewed the condition of canals and railroads in Virginia.⁵ The James River and Kanawha Canal Company was chartered in 1832 by the legislature, with a capital stock of \$5,000,000. The sum of \$2,000,000, or two-fifths of the stock, was subscribed by the State. Three plans for the improvement were then under consideration, first, a continuance of

¹*Hunt's Merchants' Magazine*, XI, 373, Oct. 1844.

²*Ibid.*, XIII, 459-468, Dec. 1845.

³*Niles' Register*, LXIX, 384, Feb. 14, 1846.

⁴*Ibid.*, 416, Feb. 28, 1846.

⁵*Hunt's Merchants' Magazine*, XV, 273-276, Sept. 1846.

the lower James River Canal to a point on the river not lower than Lynchburg, with a railroad from the western termination of that canal to some convenient point on the Great Kanawha River below Great Falls and the improvement of the Kanawha River to the Ohio so as to make it suitable for steamboat navigation; second, a continuation of the James River Canal and a railroad to the Ohio; and third, a railroad from Richmond to the Ohio. The second plan was the first adopted, and the company succeeded in constructing a canal along the valley of the James River from Richmond to Lynchburg, about 147 miles, and in making improvements in the rapids and shoals of the Great Kanawha, before they were forced to discontinue. This failure naturally prejudiced the people of Virginia against internal improvements, and though many arguments were put forth in favor of the third plan, an all-rail route, the required capital of \$10,000,000 was not forthcoming. The charter of the Richmond and Ohio was a very liberal one, its only restriction being that the route of the road was not to be on the same side of the James as the canal, a restriction to the road's advantage, since the more southerly route was 40 miles shorter. In other respects the road was most free from legislative interference of any kind.

To the south of Richmond the roads were earning fair profits. The Richmond and Potomac paid 6 per cent dividends in 1844.¹ The smaller roads had a larger opportunity for popular favor than the great ones requiring the investment of considerable sums. In 1847 the voters of Richmond decided by a large majority in favor of a subscription by the city to the stock of the Richmond and Danville, up to the amount of \$200,000.² The Greensville and Roanoke, a short road running from Gaston to Hicksford, paid about 4 per cent to its stockholders in 1847, but there was a decrease steadily growing since the third year of its operation.³ The Petersburg Road showed an increase of from 6 to 7 per cent in 1848.⁴ On the whole, the Virginia roads seem to have been in a comparatively sound condition at this time and would have been regarded with greater confidence by the public had not the canal project swept the facts from the popular mind.

In 1849 there were several bills appropriating money from the State treasury in aid of railroads then under construction or in prospect. \$100,000 annually for 3 years was promised in aid of the Blue Ridge Railroad, and a subscription of \$90,000 was made for the extension of a railroad to Staunton, in the Shenandoah Valley. The Virginia and Tennessee Railroad received a subscription of \$1,800,000 on its \$3,000,000 of capital, and the Orange and Alexandria Road received the same amount, in addition to a large sum previously authorized. A railroad from the town of Buchanan to the Roanoke River was authorized and State aid granted, and proposals to subscribe \$300,000 to the Fredericksburg and Blue Ridge, and \$90,000 to the Alexandria

¹*Niles' Register*, LXVI, 428, Aug. 24, 1844.

²*Ibid.*, LXXIII, 166, Nov. 13, 1847.

³*Hunt's Merchants' Magazine*, XVIII, 434-435, April 1848.

⁴*Ibid.*, XIX, 436, Oct. 1848.

and Valley Road were rejected. At the same time a bill was passed transferring the whole of the State's stock in the Petersburg and Roanoke, \$325,000, to the city of Petersburg, to enable it to build a road from Petersburg to Burkeville, on the Richmond and Danville Road, then in process of construction.¹ Most of these plans were not destined to achieve the success their early promoters conceived for them. In spite of State aid and the efforts of cities like Richmond and Petersburg to extend their spheres of influence farther inland, the projected road to the Ohio had been built but a little beyond Charlottesville as late as the beginning of the Civil War. The road from Lynchburg through the Blue Ridge reached Chattanooga in the decade 1850-1860, and the Richmond and Danville was built in the same period. The other roads were gradually abandoned. A few smaller roads, or connections, were constructed, as the Seaboard and Roanoke, from Weldon, North Carolina, to Norfolk and the Manassas Gap Road. The Orange and Alexandria, and the Richmond, Fredericksburg and Potomac were begun, but unfinished at the end of the decade.²

The case of the Richmond and Danville in 1851 is fairly typical of other roads. It was completed as far as the Chesterfield coal-mines in that year and should have reached the Appomattox River had it not been for the delay caused by failure to receive on time the iron rails ordered in England. Dilatory payment of assessments by stockholders, without which the whole of the aid from the State could not be secured, and their inability to sell their bonds, although guaranteed by the legislature, were additional sources of trouble.³ In the meantime the James River and Kanawha Canal was being slowly continued, although not yet in a condition to earn even a small part of the interest on its bonds.

The Virginia and Tennessee was opened to Salem, 62 miles beyond Lynchburg, in 1851. In the same year a dividend of 12 per cent was declared by the Winchester and Potomac,² and a convention was held at Abingdon, Virginia, for the purpose of arousing interest in the Virginia and Tennessee and to obtain the \$200,000 which the president of the company stated was necessary to complete the work from Lynchburg to the Tennessee line.⁴

The Virginia Central in 1852 showed gross receipts of \$176,485, an increase of \$32,684 over the preceding year. The net receipts for the same time were \$74,902, nearly 6 per cent on capital. The Winchester and Potomac showed a gross increase of \$29,161.08 for the same year. Affairs on the Virginia and Tennessee began to look more prosperous by 1853. Forty-eight miles of track were put into use in 1852, all the work preliminary to the grading done, 72 miles of the first section graded and 58½ miles of track laid, and most of

¹*Niles' Register*, LXXV, 206, March 28, 1849.

²*DeBow's Commercial Review*, XI, 330, Sept. 1851.

³*Ibid.*, X, 341, March 1851.

⁴*Ibid.*, XI, 651, Dec. 1851.

the second section, 63 miles in length, graded. The sum of \$125,000 had been raised in the 14 months since the Abingdon Convention, leaving \$75,000 still to be raised. It will be remembered that the State held a three-fifths interest in this road, amounting to \$1,800,000. Stock to the amount of \$1,200,000 remained for private stockholders, of which \$1,125,000 had been sold in 1853. It was now discovered that the road would cost \$1,500,000 more than its capital stock covered. To meet the deficiency it was proposed to issue 6 per cent coupon bonds, due in 20 years, secured by a mortgage on the road. Again the State was expected to come to the aid of the road by a loan of two-thirds the amount.¹ From this time on the road progressed with comparative rapidity. In 1852 there were in the State 676 $\frac{3}{4}$ miles of railroad completed, and 636 $\frac{3}{4}$ miles under construction,² as shown in the following extract and table:

"The public works for which the State raised a loan recently, are fast progressing. Four great lines of railway will shortly cross her territory; one of them through Piedmont, east of the Alleghenies and south of James River to North Carolina; a second to Tennessee, through which it will be extended to the Mississippi; a third to the Ohio, at the extreme southern portion of Ohio; and the fourth across northwestern Virginia to the Ohio, near the lakes."

Table 58 presents a condensed view of railroad progress in the State, together with the interest of the State in their capital stock.

TABLE 58.—*Virginia Railroads in 1853.*³

	Miles in length.	Miles completed.	Capital stock.	State interest.
Appomattox Railroad (late City Point)....	9	9	\$110,000	.....
Clover Hill Railroad.....	11.5	11.5	250,000	.....
Blue Ridge Railroad.....	16.75	.....	600,000	\$600,000
Greenville and Roanoke Railroad.....	21	21	289,100	.....
Manassas Gap Railroad.....	103	.....	800,000	320,000
Orange and Alexandria Railroad (including branch).....	98	30	1,037,500	600,000
Petersburg and Roanoke Railroad.....	60	60	769,000	.....
Richmond and Petersburg Railroad.....	22	22	685,000	885,000
Richmond, Fredericksburg and Potomac Railroad.....	76.5	76.5	1,000,000	275,200
South Side Railroad.....	122	30	1,400,000	480,000
Do.....	.....	.....	.....	325,000
Tuckahoe and James River Railroad.....	4.5	4.5	68,600	.....
Seaboard and Roanoke Railroad.....	9	80	500,000	.....
Virginia and Tennessee Railroad.....	209	50	3,000,000	2,000,000
Virginia and Central Railroad (to Covington)	195	105	1,817,300	1,094,800
Winchester and Potomac Railroad.....	32	32	300,000	83,333
Richmond and Danville Railroad.....	147	46	2,000,000	1,200,000
Northwestern Railroad.....	100	.....	1,500,000	.....
Baltimore and Ohio Railroad (in Virginia)...	240	99	.....	.....

Length of railroads in Virginia, 1,602 $\frac{1}{2}$ miles; capital stock, \$16,117,100 (omitting Baltimore and Ohio Railroad); State interest, \$7,364,433.33. Length of railroads in Virginia completed, 676 $\frac{3}{4}$ miles; length of railroads in Virginia in progress (under contract), 636 $\frac{3}{4}$ miles."

¹DeBow's *Commercial Review*, XIV, 169, Feb. 1853.

²Hunt's *Merchants' Magazine*, XXVI, 505, April 1853.

³The figures are given as printed in *Hunt's Merchants' Magazine*, XXVI, 505, April 1853, although apparently not quite accurate.

The institution of slavery affected the attitude and the thought of the South towards railroads as in other matters, and it very likely also influenced the interest of outside capital, making it reluctant to invest in a region whose economic life, it was felt, was based on an uncertain institution. A reflection of Southern feeling is found in the following words of a writer in the *Richmond Enquirer*, early in 1853:¹

“Whoever will examine the system of works whose early completion is now provided for by Virginia, will be struck with the prodigious extent of country which they will command. From Alexandria a chain of railroads is planned to reach out, by connections with the Baltimore and Ohio Railroad and the railroad system of Ohio, to the lakes, over which route Alexandria will be 200 and Norfolk 120 miles nearer Chicago, the chief city of the lake country, than the city of New York. From Richmond stretches out another great chain of railroads due west across the State² to Cincinnati, whence another road prolongs it to St. Louis, the centre of the Mississippi Valley, by which route Richmond will be 400 miles and Norfolk 280 miles nearer to each of these emporiums of Western trade than New York. From Richmond and Petersburg also extends a chain of railroads nearly all of which is either constructed or provided for, across the southern portion of Virginia, through the Cumberland Gap to Louisville, Kentucky, thence to be continued by a proposed railway entirely in slave territory to St. Louis, by which route Louisville will be nearer to Norfolk than New York by 340 miles, and nearer to Richmond and Petersburg than to New York by 450 miles. By this chain of railroads also, St. Louis, the emporium of the largest western slave State, will have connection with Norfolk, the seaport of the greatest Eastern slave State, almost entirely through slave territory, by a route 280 miles shorter than the shortest route between St. Louis and New York. From Richmond, Petersburg, and Alexandria, also, extend important railroads, one of them due south over the eastern portions of the South Atlantic States, connecting with their cities and railroad systems, and another reaching more westerly in its southern course and wanting but a short extension into North Carolina to connect, by a union with more southern railroads, the best cotton and tobacco regions of the Union with the cities of our State.”

In 1853 four of the older roads of the State paid dividends of from 7 to 12 per cent, and Virginia railroad shares sold at an average of about 70.³ Some of the poor returns made by the roads seem to have been due to bad management and lack of knowledge of fundamental principles. For one thing, rates of fare were very high. Virginians claimed they were the highest in the country. The Richmond and Petersburg, 22 miles long, with its stock selling at 40, passed its dividend in 1853, and in 1854 raised its fare from 5 to 6 cents per mile, double the rate at which the Georgia roads were making good dividends.⁴ To such short-sighted policy, as well as the factors already noted, are doubtless due the poor results from many of the Virginia roads.

¹Quoted in *Hunt's Merchants' Magazine*, XXVIII, 505-506, April 1853.

²The line now taken by the Chesapeake and Ohio. Not built until after the Civil War.

³*DeBow's Commercial Review*, XVI, 648, June 1854.

⁴*Hunt's Merchants' Magazine*, XXXI, 251, Aug. 1854.

NORTH CAROLINA.

The first "railroad" in North Carolina was a short track of iron used for handling the stone quarried for the new State capitol. In 1832 North Carolina chartered her first real railroad, in an act authorizing the extension of a railroad from Portsmouth to the Roanoke River. Only a few miles of this road were in North Carolina, but it was the beginning of communication with the outside world.¹ The spirit of internal improvements, however, was vigorous in this State, as in the neighboring States, and was especially centered, as in other States, in her chief city, Wilmington. In 1833 an internal improvements convention was held at Wilmington. Four principal and very significant resolutions were passed: (1) that a liberal system of internal improvements should be immediately organized and vigorously prosecuted; (2) that the general assembly ought to provide "by law or otherwise" a fund for the purpose of internal improvement; (3) that this fund ought to be applied, in the first instance, exclusively to creating and improving markets within the limits of the State, and that provision should be made by law that the State should subscribe for two-fifths of the stock of every company chartered for internal improvements; and (4) that every company so chartered ought to have power to connect with all other public works.²

The Petersburg and Roanoke (see section on Virginia) was intended to save the long water-route by way of Norfolk, and to carry goods straight to the Roanoke River, and by transshipment at Weldon into the sheltered navigation of Albemarle and Pamlico Sounds, to the coast cities.³ In response to the popular demand reflected in the Wilmington Convention, the Roanoke and Wilmington from Wilmington to Weldon on the Roanoke was promoted by the citizens of the former city and was chartered in 1833; it was originally intended to extend from the lower Cape Fear to Raleigh, but was deflected to meet the Petersburg and Portsmouth roads at Weldon. Another road, the Raleigh and Gaston, built from the Roanoke to the capital, was chartered in 1835.⁴ In the same year as the Wilmington and Roanoke, another road was chartered to extend from the terminus of the Petersburg Road to Greenville (Greensboro) in the northern part of the State, but it was never built.

Three railroad bills were presented to the legislature in 1835—the two amendments, one to the Wilmington and Weldon, and one to the Raleigh and Gaston, mentioned above, and the bill to incorporate the Charleston and Cincinnati.⁵ The latter was a joint act with the States of South Carolina, Tennessee, and Kentucky. (See section on South Carolina.) At this time public opinion was much in favor of

¹Moore, *History of North Carolina*, II, 27.

²*Niles' Register*, XLIV, 354, July 27, 1833.

³Wood, *A Practical Treatise on Railroads*, 548.

⁴Moore, *History of North Carolina*, II, 29.

⁵*Niles' Register*, XLIX, 283, Dec. 26, 1835.

the State's building a series of roads, but as a compromise the State granted aid to the Wilmington and Roanoke and the Raleigh and Gaston, by means of stock subscriptions and indorsement of funds in the former case, and indorsement of bonds under a mortgage in the latter.¹ In 1836 there were 7 railroad bills before the legislature of North Carolina, but few companies were ever actually incorporated under the charters granted.²

The year 1836 also saw construction beginning on the Wilmington and Roanoke. In 1838, 52 miles, 12 from Weldon on the north and 40 from Wilmington, were opened to traffic. Between the two a stage-line was run to care for the through passengers. An effort was being made at the same time to build a road connecting the Raleigh and Gaston, also under construction, with the new branch of the Charleston and Hamburg at Columbia.³ The stock was subscribed, but apparently never paid in, and the road was never built.

The Raleigh and Gaston got into difficulties with its construction in this year, and the State indorsed its bonds to the amount of \$500,000. The road was not well managed, and seems to have failed to obtain public confidence in its securities.¹ The cotton crisis, moreover, which slackened railroad building all over the South, affected the roads heavily. However, the Raleigh and Gaston was finished in July 1839, at a total cost of about \$1,600,000, of which \$600,000 had been subscribed by the State. The length of the road was 86 miles, and it had cost nearly \$20,000 per mile. Early in the next year the Wilmington and Raleigh was opened with great ceremony.⁴ Its promoters, the citizens of Wilmington, were exceedingly proud of it, as the product of their energy and good management. With the completion of this road, said at the time to be the longest in the world, the journey from Norfolk to Wilmington could be made in less than a day's travel, a fact that was considered a great event. Another day's journey, by steamboat, brought the traveler to Charleston.⁵

Many other roads were contemplated, but failed of construction. Railroad conventions, of which there were many, resolved ambitiously at the expense of the State treasury. But such expectations of stock subscriptions failed to materialize, for very obvious reasons, and construction was at a standstill until the "great era" of railroad building of the fifties. The North Carolina roads did not share so quickly in the general revival of business. The Raleigh and Gaston Road was in difficulties from its opening. State aid was extended to it twice, but it failed to pay, and in 1845 the State treasurer advertised

¹Wheeler, *Historical Sketches of North Carolina*, I, 136.

²*Niles' Register*, XLIX, 309, Jan. 2, 1836.

³*Ibid.*, LV, 176, Nov. 10, 1838.

⁴*Ibid.*, LVIII, 64, March 28, 1840.

⁵Hazard, *United States Commercial and Statistical Register*, I, 80, July 1839.

it for sale at public auction under the mortgage.¹ It was bought by the State and held under State control for several years.² During this time, when a contemporary writer characterizes North Carolina as in "profound sleep,"³ the road greatly deteriorated. In 1848 the governor recommended that the road be transferred to a private company, but the suggestion was not adopted. Three years later the State offered to release it to the stockholders on condition that they expended \$400,000 in reconstruction,⁴ and activities commenced for obtaining the offered charter. During the summer of 1851 numerous conventions were held in the towns on the line, to arouse enthusiasm and gain subscriptions for a reorganized company to assume the charter. By September, 4 months after the legislature passed the bill, \$190,000 of the amount pledged by the towns⁵ was subscribed, and the road passed into the hands of a private company.

The desirability of the connection between the North Carolina and South Carolina roads was early established. Several routes were proposed for this "Connecting Link" railroad, as it was called.⁶ There were three main routes: One was an extension of the proposed Raleigh and Charlotte to Columbia; a second was from Raleigh to Camden by way of Fayetteville; and the third was from Wilmington to Camden by way of Manchester. Roads over the first and third routes were built in the decade 1851-1861, but none over the second route.

The Wilmington and Roanoke (also called the Wilmington and Weldon) was by 1850 a prosperous and well-managed road, which seems to have consistently competed for through trade. The rates made by the road in conjunction with coasting steamers from New York to Charleston were regularly lowered until 1848.

The Wilmington Road promoted the construction of the Wilmington and Manchester between 1848 and 1852, but the latter road was built by a separate company. It was put under contract, with a few minor exceptions, all the way from the Peedee to Manchester, including grading, timber, trusswork, etc., and part of the rails were purchased, by November 1850, and the company expected to have the rails laid in time to move the next crop from the Peedee country.⁷ Their chief need was for money to buy iron, but the people of the State were not sufficiently awake to the advantage of a railroad and showed little interest in it. Aid was sought from other sources, and was obtained in part from outside capital. South Carolina appropriated \$20,000 by act of legislature, and Wilmington was permitted to take \$100,000 in stock, issuing bonds therefor for 15 and 20 years.

¹*Niles' Register*, LXIX, 108, Oct. 18, 1845.

²*Wheeler, Historical Sketches of North Carolina*, I, 136; *DeBow's Commercial Review*, XIII, 409, Oct. 1852.

³*DeBow's Commercial Review*, VIII, 87, Jan. 1850.

⁴*Ibid.*, X, 572, May 1851.

⁵*Ibid.*, XI, 330, Sept. 1851.

⁶*Ibid.*, V, 92-93, Jan. 1848.

⁷Letter of Pres. Gen. Harlee, in *DeBow's Commercial Review*, IX, 555, Nov. 1850.

Progress was slow, but the road was finally opened over its whole length of 168 miles in 1852.¹

In 1848 a road called variously the Connecting Link, the North Carolina Central, and the Charlotte Road, was incorporated.² It was to run from Goldsboro on the Wilmington and Weldon to Raleigh, and thence via Hillsboro, Greensboro, Lexington, and Salisbury to Charlotte, where it would connect with the Charlotte and South Carolina extension of the South Carolina Railroad to Columbia.³ The capital stock was \$300,000, of which the State promised two-thirds as soon as the promoters had secured one-third in private subscriptions. This proved a long and tedious task, with many disappointments, mainly because insufficient attention was paid to the legal conditions imposed. After the amount was supposed to have been raised it was found that \$47,000 could not be counted as available, because the required cash payment had not been made, and also the subscription of \$10,000 by the Petersburg Railroad was found to be illegal. The promoters at one time very nearly abandoned the project because of the difficulty of obtaining capital. The southern end of the line, to Charlotte, built by a company aided by the South Carolina Road, was begun in 1848 and finished about 1853. A second route from Raleigh to Columbia by way of Fayetteville was projected in 1851, but failed of construction. Fayetteville was eager for a railroad into its back country, since it was depending upon New York for such local supplies as hay, but it had to be content with a plank road until after the Civil War, when a branch from Wilmington reached it.

KENTUCKY.

The first railroad west of the Alleghenies, and, as claimed by its historians, the second in the United States, was built in Kentucky from Lexington to Frankfort, and later extended to Louisville. It was chartered in 1831 after much discussion of the general advisability of railroads. The probable effect of the proposed road upon the cattle-raising industry seems to have been an important consideration. Frankfort, a town especially interested in the cattle industry, apparently was not sure that a railroad would be of any advantage in marketing its products. The point of view of those opposed to the new invention is shown in a quotation from the *Frankfort Commentator* of 1830:⁴

"We are told that live-stock, such as we have mentioned, is frequently carried in boats, and that whatever can be carried by water may be conveyed with three times the speed and twice the safety in the case of a railroad. It is admitted that live-stock might be carried in the case of a railroad. But would it be *convenient*? Is there any way of transporting live animals so cheap, safe,

¹ *De Bow's Commercial Review*, XIII, 528, Nov. 1852.

² *Ibid.*, XIII, 410, Oct. 1852.

³ *Ibid.*, IX, 555, Nov. 1850; XI, 427, Oct. 1851.

⁴ *Niles' Register*, XXXVIII, 66, March 20, 1830.

and convenient as upon their own feet, followed by drivers? They are sometimes carried in steamboats and sometimes in flats. That is from necessity, not choice. Did ever a man who had twenty head of fat bullocks to take from Franklin to Louisville act so absurdly as to cram them into a flat boat and float them down instead of driving them, bad as the roads frequently are?"

On the other hand, it was urged that whether railroads should present the cheapest and best means of sending cattle to market was a question that could only be solved by experience. On the Hudson it had been found very advantageous to send a large part of the cattle for the New York market in tow-boats, because of the greater cheapness over the old methods, and also because the animals arrived in much better condition than before. Judging from this experience, the time was likely to come when railroads would be found by far the best method of transporting live cattle.

On April 16, 1831, the stockholders of the Lexington and Ohio, as the road was called, met at Lexington. Stock amounting to \$600,000 was then subscribed. Henry Clay, at this time an ardent supporter of railroad schemes, was in the chair.¹ The city of Lexington subscribed \$25,000 towards the road, and construction from Lexington to Frankfort was finished in 1835. The plan was for a railroad to Louisville and a turnpike to Maysville, farther up on the Ohio. These two roads were expected to increase the market for products of the Lexington region.²

Until after 1851 the Lexington and Frankfort Railroad, with its extension to Louisville, was the only railroad in the State. The original track consisted of longitudinal sills of limestone, 10, 15, and 18 feet in length, with cross-ties laid beneath at intervals of 4 or 5 feet. The rails were strips of iron $2\frac{1}{2}$ inches wide, fastened to the sills with lead or sulphur. The frosts of the first winter broke up the stone sills badly, and they were replaced with wood. The first cars were drawn by mules or horses, held 4 persons, and were built on the model of the old stage-coaches. A later type of car was a two-story structure, for ladies and children below and for men above. The first locomotive was a little affair made by a Lexington mechanic. It had no cab, the tender was an open box-car, and in the place of a cow-catcher or pilot two large beams projected in front, with hickory brooms attached for sweeping the track.³

There is record of another "railway," from the center of Bowling Green to the Barren River, about a mile in length. It was built in 1832, and was used by cars or coaches drawn by horses. It seems to have been originally intended to run a road from the town of Franklin north to Bowling Green, but no further route was established until the construction of the Louisville and Nashville Road, between 1850 and 1860. The State of Kentucky aided both the Barren River Railroad and the Lexington and Frankfort to a total amount

¹*Niles' Register*, XL, 181, May 14, 1831.

²*Ibid.*, 194, May 21, 1831.

³Kennedy, *Wonders and Curiosities of the Railway*, 620.

of \$400,000.¹ The 28 miles between Lexington and Frankfort cost \$544,798, and in 1840, when the operations of the company were suspended, \$200,000 more had been expended on the road to Louisville, 66 miles farther. The State was compelled to pay interest on the company's debts, which it had guaranteed, to the amount of \$8,000.² The road was completed shortly afterward, but the railroad system of the State did not, in spite of many plans and projects, increase to the same degree as in neighboring States, in proportion to the needs of the people.³ The State joined in the plans for the Louisville, Cincinnati and Charleston Railroad, in the Knoxville Convention of 1836, but was the one State which failed to charter the road, the failure being a consequence probably of the local jealousies of Louisville and Maysville as against Cincinnati.

The Louisville and Frankfort Road had many vicissitudes during the decade 1840-1850.⁴ It seems to have been in running order only part of the distance between Lexington and Louisville for most of the time, as one writer speaks of Louisville as having not a line of railroad running out in 1848, and observes that the city, on adopting a policy of railroad subscription and support, increased its own prosperity.⁵ In 1843 interest in the road revived somewhat, and the State expended over \$1,000,000 in repairing it and in attempting to make it fit for use.⁶ The great revival of railroads began to be effective in Kentucky in 1851. The Louisville and Nashville and the Lexington and Maysville Roads, as well as the Covington and Lexington and other roads, were aided by the State or by local subscriptions in large sums. The general development of the road system of the State seems to have been outward from Lexington.⁷

The following is a statement of the condition of the Louisville and Frankfort Railroad in 1852:⁸

"This road extends from Louisville to Frankfort (Kentucky), a distance of 65 miles, where it connects with the Lexington and Frankfort Railroad, which is 29 miles in length, both roads making a distance of 94 miles. The fare between Louisville and Frankfort is \$2, a fraction more than 3 cents per mile. The fourth annual report of the president and directors of the Louisville and Frankfort Railroad, submitted to the stockholders at their annual meeting, July 5, 1852, presents the condition of the work. The capital stock is made up of a subscription of the city of Louisville of \$510,875, paid by taxation on the property of the citizens during the years 1848, 1849, and 1850; \$300,000 paid in city bonds on time, and \$42,812.50 individual subscriptions, to this to

¹ *Monthly Chronicle of Interesting and Useful Knowledge*, I, 4, Jan. 1839.

² Hazard, *United States Commercial and Statistical Register*, II, 275, April 1840.

³ Homans, *Railroads in Kentucky*, 16-23.

⁴ *Hunt's Merchants' Magazine*, XXVII, 635-636, Nov. 1852; note on condition of Louisville and Frankfort in 1852.

⁵ *Ibid.*, XXIX, 760, Dec. 1853.

⁶ *Niles Register*, LX, 120, April 24, 1841; LXIII, 374, Feb. 11, 1843.

⁷ *DeBow's Commercial Review*, X, 340, March, 1851; X, 571, May 1851.

⁸ The figures are given as printed in *Hunt's Merchants' Magazine*, XXVII, 635-636, Nov. 1852, although apparently not quite accurate.

be added \$51,443.42 interest on the payments for stock, making in all \$905,130.92. From the report of the engineer and superintendent of road is given the total receipts since the first locomotive was put on the track, \$222,786.18, and the total expenses, \$130,338.64, including the hauling of iron and other material. Within the year the road has been connected with the Lexington Road, sidetracks laid at Frankfort, Pleasureville, and Smithfield, water stations put up along the line, the depot at Louisville built, and engine-houses put up at that place and Frankfort. The passenger business for the present June has exceeded that of the corresponding month in 1851 by 16 per cent. At this rate of increase the receipts for the coming year will be \$195,000. There are 10 eight-wheeled and 1 six-wheeled locomotives on the road, 2 freight engines of 10 wheels to be delivered in September. The total mileage of the engines was 135,000 miles and they averaged 18,000 miles each. The receipts per mile run were \$1.244, expenses \$0.734, expenses deducting items above mentioned, \$0.611. The total cost of the road, including interest in cash and stock up to July is \$1,358,764.43. The receipts for the year were, passengers \$99,971.42, freight \$63,402.81, mails \$5,546.02, total \$167,920.25. Expenses, \$99,134.19, less one-half for repairs \$12,600, and wood on hand \$4,000, total \$12,600; leaving expenses at \$84,534.19. Balance in favor of receipts, \$85,386.06."

TENNESSEE.

Tennessee evinced even less of practical railroad activity than Kentucky. There was a great deal of discussion, but little building. In 1833 there was talk of a road to be built by the National Government from the Mississippi River northeast to the ocean, roughly a route from New Orleans or Natchez to Washington or Baltimore. As a part of this project the "New Orleans and Nashville" was chartered, and in 1835 the directors claimed to have received subscriptions for all the stock, and to expect to complete the road in a few years. Like most sanguine promoters of the period, they probably much underestimated the cost and the difficulties.

In 1836, the year of the Knoxville Convention, Memphis endeavored to start a system when a railroad from Memphis to La Grange was chartered. A peculiar provision of the charter required each 5-mile section to be commenced and completed at the same time. The result was that the road was graded practically the whole distance, and no part put into operation until after 1848, when an application was made for the transfer of the charter by a grant to a new company and the road was rapidly completed.¹ The original road was 70 miles long and half the capital stock was owned by the State. The company suffered from the financial depression of 1837-38, and owing to the exhaustion of its capital and inability to obtain more, and to the fact that no part of the road was in a condition to earn anything, it was forced to stop operations.

The New Orleans and Nashville Road was kept before the public for some time. Mississippi chartered it in 1837, and apparently some 23 miles of road were graded and the track laid. It, too, succumbed,

¹*DeBow's Commercial Review*, V, 87-88, Jan. 1848.

however, and was sold in 1842 to the State of Louisiana, including the land, road-bed, and track, with all rolling-stock and buildings.¹

In 1836 were chartered also the Memphis and Charleston, to connect with the Nashville and Chattanooga at Stevenson, Alabama, and the East Tennessee and Georgia, also known as the Hiwassee Road. Ground was broken for construction of the latter in 1837. It received aid from the State in the same year to the amount of \$650,000,² but its construction proceeded very slowly for the next 15 years, and it did not reach Knoxville until 1856.³ Its chief purpose during this time seems to have been to act as a spur to the Georgia roads that were reaching out into the country across the mountains.

In 1845 the project of two years earlier for a railroad from Nashville to Chattanooga, there to connect with roads leading to the seaboard, was revived. On December 11 a charter was issued to the Nashville and Chattanooga, and the securing of subscriptions was vigorously pushed.⁴ The capital stock was subscribed in several ways. Nashville subscribed \$500,000, Charleston a like sum, the Georgia Railroad \$250,000, Murfreesboro \$30,000; \$50,000 came from State bonds, and \$780,000 from individuals.⁵ The road was organized in 1848, and construction proceeded rapidly.⁶ The road was put under contract, with the expectation that it would be completed in 1851 over the whole distance of 123 miles. These plans were far too sanguine, but what did result speedily was an enhancement in property values in the four counties—Davidson, Rutherford, Bedford, and Franklin—through which the road ran. From 1848, when the road was first organized, to 1849, the increase in property values in these counties exceeded \$2,500,000.⁷ In 1854 the road was open to the public.⁸

The stimulus to this development arose from the great commercial convention held in Memphis in 1845. John C. Calhoun was president of the assembly, of which the most immediate result was the construction of the road from Memphis to the Western and Atlantic at Rome. In 1848 the various plans set on foot resulted in a new system of State aid, by which the State was to indorse the mortgage bonds of the companies instead of issuing its own, the State being secured by a lien on the whole stock of the company and the road fixtures. This plan, however, proved as unsatisfactory as the others, and two years later an attempt was made to remedy the disadvan-

¹*Niles Register*, LXIII, 32, Sept. 10, 1842.

²Killibrew, *Introduction to the Resources of Tennessee*, 310.

³*Niles' Register*, LXIII, 264, Dec. 24, 1842; *DeBow's Commercial Review*, IX, 226-227, Aug. 1850; XIV, 411, April 1853.

⁴Killibrew, *Introduction to the Resources of Tennessee*, 306-307; *Niles' Register*, LXIX, 39, Sept. 20, 1845; 309, Jan. 17, 1846.

⁵*DeBow's Commercial Review*, X, 469, April 1851.

⁶*Ibid.*, XVI, 648, June 1854; XVIII, 401, March 1855; XV, 211, Aug. 1853.

⁷*Hunt's Merchants' Magazine*, XXII, 564, May 1850.

⁸*DeBow's Commercial Review*, XVI, 648, June 1854.

tages by having the State issue its own bonds and take title to the roads, individual stockholders being required to accept and ratify the act.¹

The Memphis and Charleston was organized in April 1850, with \$1,200,000 of the stock subscribed.² It was to run over the old ground of the Memphis and Lagrange to the latter place, thence to Tuscumbia, Alabama; from Tuscumbia to Decatur over the Tennessee Valley Road; from Decatur to Huntsville; from Huntsville to a junction with the Nashville and Chattanooga at Winchester. The capital of the road was \$3,000,000.³ It was completed to Stephenson, Alabama, in 1855, and to the connection with the Nashville and Chattanooga in 1856.⁴

Several other roads connecting Tennessee with neighboring States were begun and actively pushed in the early fifties. Such was the Southwestern Railroad, from McMinnville to Winchester, on the Nashville and Chattanooga. It was intended to form part of a great through road from Cincinnati to Pensacola, Mobile, and New Orleans, but became only a minor branch of the more important road.⁵ From Knoxville the East Tennessee and Virginia was building in 1851 to meet the road from Lynchburg,⁶ a proposed trunk-line, of which great hopes were entertained. In 1854 both Knoxville and Nashville sought outlets to the Ohio Valley, and Kentucky chartered a road called the Kentucky Union Road, over the old line proposed for the early Cincinnati and Charleston project.⁷ The Louisville and Nashville was the successful one of these projects. It was begun in 1853 and pushed successfully to its completion soon afterward. The earlier difficulties in obtaining capital were not experienced in so large a degree by this road. Its bonds sold well in London and it obtained the subscriptions it desired in every county on the route. Louisville subscribed \$1,000,000 and \$300,000 came from Nashville and its surrounding territory.⁸

ALABAMA.

Railroading in Alabama began with the idea of creating a substitute for the canal, and to overcome the difficulties in the navigation of the Tennessee River at the Muscle Shoals. The first railroad was begun in 1831 and 44 miles of it between Tuscumbia and Decatur were completed in 1833. The motive-power was at first horses; later an engine was put on, and the event attracted a great deal of attention.⁹ In 1834 a company was formed to build a road from Selma to West Point, on the eastern boundary, via Montgomery, a distance of 160

¹Phelan, *History of Tennessee*, 282; *DeBow's Commercial Review*, VIII, 217-232, March 1850.

²*DeBow's Commercial Review*, IX, 222, Aug. 1850.

³*Ibid.*, X, 467-469, April 1851; XIII, 83, July 1852.

⁴*Ibid.*, XVIII, 263, Feb. 1855; XIV, 411, April 1853.

⁵*Ibid.*, XV, 317, Sept. 1853.

⁶*Ibid.*, XI, 330, Sept. 1851.

⁷*Ibid.*, XVI, 101, Jan. 1854; 441, Apr. 1854; XVII, 105, July 1854; XV, 211, Aug. 1853.

⁸*Ibid.*, XV, 211, Aug. 1853; XVI, 102, Jan. 1854.

⁹Brown, *A History of Alabama*, 158; *Niles' Register*, LXX, 20, March 14, 1846.

miles and the road was opened from Montgomery to Franklin in Macon County in 1840. This road was reorganized in that year as the Montgomery and West Point Railroad Company of Alabama, and was extended to West Point, Georgia, in 1851.¹ The Mobile and Girard, chartered in 1846, and the Mobile and Ohio, in 1848, and several minor projects for local purposes were also under way in this decade, but progress was exceedingly slow. Tuscaloosa was deeply interested, in 1847, in a road that should give her an outlet to Charleston,² and Mobile at the same time wanted a system of roads running back into the State and also into the cotton regions of Mississippi.³ Conventions were held, and much effort, partly successful, was made to rouse interest in these roads.

In connection with the Alabama and Tennessee Road, much discussed in 1848-1850, there was a demand for the nationalization of the local and State systems of roads in the interest of more through lines between North and South, and it was urged that gage, running-time, rates of fare, and freight should all be so arranged that through passage might be made without change of cars or breaking bulk.⁴ The Alabama and Tennessee Road was popularly considered a State and National enterprise rather than private.⁵ The project dated from 1819, when it was mentioned in the message of Governor Bibb. At that time only turnpikes and canals between the navigable waters of the Tennessee and Alabama Rivers were contemplated.

The idea of a railroad came in 1836, when a company was chartered to build a road from Selma through the counties of Dallas, Perry, Bibb, Shelby, and St. Clair. Work was vigorously prosecuted, and over 27 miles were graded from Selma through a difficult portion of the line, when the enterprise was buried by the cotton panic. In 1849 the legislature renewed the privileges of the old charter, which had been forfeited during the bankruptcy.⁶ A convention was held at Shelby Springs early in 1850, but it adjourned without doing anything very definite. A second convention in October of that year was more successful. The various counties and towns along the route subscribed some \$923,000, and there was also a large appropriation from the legislature divided pro rata among the sections.⁷ Ground was broken in December 1850, and shortly afterward a consignment of rolling-stock, consisting of a locomotive, tender, 13 freight cars, and a passenger car, arrived from Chattanooga.⁸ The road by this time

¹McCall, *A Sketch, Historical and Statistical of the City of Montgomery*, 41-44. The terminus is called Fort Decatur in McCall, but other authorities give Franklin. Both names seem to have been superseded at the present time.

²*Ibid.*, IV, 409, Nov. 1847.

³*Ibid.*, III, 146-147, Feb. 1847.

⁴*Hunt's Merchants' Magazine*, XXIII, 233-236, Aug. 1850.

⁵*De Bow's Commercial Review*, IX, 218, Aug. 1850.

⁶*Ibid.*, VIII, 178-179, Feb. 1850; XVIII, 23, Jan. 1855.

⁷*Ibid.*, IX, 552, Nov. 1850.

⁸*Ibid.*, X, 340, March 1851.

was also a part of the Memphis and Charleston, which was nearly completed. The first efforts of the company were to push the road through to connect with the Georgia Road at Rome, building it in sections of about 45 miles each year. The whole distance was about 180 miles, of which over 57 miles were actually ready for the track the first year.¹ In 1852 it was proposed to extend the road westward from Montgomery by way of Selma, Uniontown, and so on to the line of the Mobile and Ohio, as a rival to the Mobile and Girard.²

The Mobile and Ohio project, for connecting Mobile with the Mississippi at the mouth of the Ohio and thence extending to St. Louis, was set on foot about the year 1846. Early in April 1847, a meeting of citizens of Mobile and the surrounding country was held in Mobile, at which great enthusiasm prevailed. A committee of 56 of the most influential citizens of Mobile and of the neighboring States was appointed to obtain the necessary information and to provide for a preliminary survey and estimate of the cost. The distance from Mobile to the junction of the Mississippi and the Ohio was about 440 miles, with 150 miles farther to St. Louis, a total of about 590 miles. The first estimate of cost to the Ohio was about \$7,000,000,³ but a later survey indicates that this could be reduced somewhat, as the engineering problems of the proposed route were not great.⁴ The legislature of the State of Tennessee was the first to bestow a charter upon the road, and also subscribed over \$600,000 to the stock. Alabama soon afterward passed an act incorporating the company with a capital of \$10,000,000, and Kentucky and Mississippi followed with grants of right-of-way and the extension of all the privileges under the act of incorporation in Alabama. In May 1848 books were opened in Mobile, and over \$650,000 of stock subscribed soon thereafter.⁵ The company was then organized, and an accurate survey and other preliminary steps were undertaken, at the direction of the company's engineer, Louis Troost.⁶ This work had so far been completed that in November 1849 contracts were let for 17 sections of the road, to be graded and made ready for the rails; this part to cost \$160,000.

By 1850 the project had become a Mobile to Chicago route, the portion in Illinois promoted by the founders of the Illinois Central. In this year the bill granting public lands in aid of the roads was passed in Congress, which was expected to insure the early completion of the road⁷ and to bring Chicago and the Great Lakes region within 48 hours of Mobile.⁸ Work went forward steadily, and 30 miles were completed in 1852. The counties and their inhabitants along the right-of-way assisted the road both by money and by labor.

¹*DeBow's Commercial Review*, X, 573, May 1851.

²*Ibid.*, XII, 97, Jan. 1852.

³*Ibid.*, III, 328-329, April 1847.

⁴*Ibid.*, V, 92, Jan. 1848.

⁵*Hunt's Merchants' Magazine*, XIX, 584-585, Dec. 1848.

⁶*DeBow's Commercial Review*, VII, 374, Oct. 1849.

⁷*Ibid.*, IX, 551-552, Nov. 1850.

⁸*Hunt's Merchants' Magazine*, XXIII, 688, Dec. 1850.

The resources relied upon for the building of the road, in addition to the land-grants, whose value lay mostly in the future after the road was built, were: (1) taxation of real estate in Mobile, 2 per cent for 5 years, \$1,100,000; (2) Mississippi subscriptions, which in 1852 amounted to \$1,000,000; (3) Tennessee subscriptions, \$650,000; (4) sale of town-sites, \$50,000.¹ In addition to these sums, large local subscriptions were received. The road was put under contract as far as the Kentucky line in 1853. The land given by Congress was estimated variously at from \$3,500,000 to \$6,500,000, making an actual capitalized value of the road \$15,000,000 to \$18,000,000.² The next four or five years saw the road push northward towards Cairo, and it was completed about 1857.

In 1851 Alabama undertook a systematic promotion of railways, and in addition to the Mobile and Ohio, four roads were aided, namely, the Alabama and Tennessee, from Selma to Gunter's Landing on the Tennessee River; the Alabama section of the Memphis and Charleston; a line to connect these two, 150 miles long; and the Mobile and Girard, from Mobile Bay to Columbus, Georgia, a total of 864 miles.³

MISSISSIPPI.

The other three States of this group, Mississippi, Florida, and Louisiana, though affected by the railroad discussions of the time, had very little actual construction until after 1850. The only road in Mississippi up to that date was the Vicksburg and Jackson, 46 miles long, commenced in 1836 and completed in 1840. This road formed the outlet to the Mississippi of an exceedingly rich cotton district. The year before the road was begun the exports from this section received at Vicksburg amounted to 50,000 bales of cotton, and the year following the number rose to 70,000. Before the road was built the cost of passage from Vicksburg to Jackson was \$10, besides \$1 more for the cost of two meals on the way, and the trip occupied from 4^h30^m a. m. to 5 p. m., or 12½ hours, and even longer in winter. When the railroad was first opened the fare was \$4, and was gradually reduced until it stood at \$2. In the same period the time occupied in transit was lowered to 2½ hours.

Freight rates were similarly affected. Before the road was opened the general cost of transportation was \$1.50 to \$2 per 100 pounds; cotton paid \$4 to \$5 per bale. The cost over the railroad was, in 1851, 11 years after the road opened, 30 cents per 100 pounds for general merchandise and 70 cents per bale of cotton.⁴ There were, nevertheless, some objectors. In 1846, for example, Vicksburg, feeling that the railroad had injured her trade, was not inclined to favor

¹*DeBow's Commercial Review*, XIV, 1853.

²*Ibid.*, XVI, 210, Feb. 1854; *Hunt's Merchants' Magazine*, XXIX, 397, Sept. 1853.

³*Hunt's Merchants' Magazine*, XXV, 759-760, Dec. 1851.

⁴*DeBow's Commercial Review*, IX, 454, Oct. 1850; XI, 598, Dec. 1851; *Niles' Register*, XLIX, 19, Sept. 12, 1835.

extension of the road to Brandon, 14 miles farther east, with a view to connecting ultimately with Selma, Alabama, and a route to the Atlantic seaboard.¹ In 1849 the cotton crop failed, but the planters managed to recoup their losses by exporting corn to the amount of 70,000 bushels, out of which the cheaper transportation enabled the community to save \$10,200, showing the great advantage of the road in marketing and thus "conferring a value on that which was before not only utterly worthless, but absolutely an encumbrance."² Three years after the Vicksburg and Jackson was opened the receipts amounted to \$113,117.66 for 9 months, during which time the expenses were \$80,839.82, leaving a net profit of \$32,179.84.³

In 1846 Mississippi passed an act for the building of the Southern Railway, to extend the Vicksburg and Jackson eastward to Selma and Montgomery and thence to the coast. The only part immediately constructed, however, was the 14 miles to Brandon, owned by the State, but operated by the Vicksburg Company. In 1850 the southern mail was still carried by four-horse post-coaches between Brandon and Montgomery.⁴ The legislature offered a bonus of \$300,000 to a company which should complete the road, but it was not finished until after 1856.

About 1850 a desire arose for connection between Jackson and New Orleans to the south and Memphis to the north. The railroads of this section developed from Jackson as a center. Other points which might have taken precedence over Jackson in this respect had the advantages of waterways and were thus less ambitious to promote railways. Jackson, the market of a rich agricultural region, wished to extend the scope both of her tributary territory and the facilities for marketing again the goods she received. For the same reason, Vicksburg was not so favorable to roads, because she saw her jobbing trade pushed farther inland, leaving her only the business incident to the break in transit from rail to water.

LOUISIANA.

The New Orleans, Jackson and Great Northern and the Jackson and Holly Springs Railroads were both ardently advocated about 1850, and the first was built as far as Jackson in the next decade, making, with the Jackson and Holly Springs, a direct line to Memphis from New Orleans.⁵ The projected line to Nashville from Jackson, although in large part surveyed and located, was not built, probably because the connection of Jackson with the Mobile and Ohio to Corinth, thence over the Memphis and Charleston to Decatur, and from there to Nashville, formed an outlet for such traffic as then

¹*DeBow's Commercial Review*, I, 146, Feb. 1846.

²*Ibid.*, XI, 599, Dec. 1851.

³The figures are given as printed in *Niles' Register*, LXV, 304, Jan. 6, 1844, although apparently not quite accurate.

⁴*Niles' Register*, LXX, 20, March 14, 1846; *DeBow's Commercial Review*, IX, 454, Oct. 1850.

⁵*DeBow's Commercial Review*, VIII, 177, Feb. 1850.

existed and rendered the construction of another road economically unjustifiable. The \$6,000,000 of stock in the road was about half subscribed by the States of Louisiana and Mississippi, \$2,000,000 by the city of New Orleans, and varying sums from the other cities and counties along the route, and about \$700,000 in private subscriptions.

The interest of New Orleans in railroads was chiefly confined to local routes into the suburban and outlying parishes. Much of the earliest discussion of "railroads" in this State was concerned with the superior form of turnpike known by that name, such as the road built in 1829 to Lake Pontchartrain.¹ Seven or eight similar local roads were built between 1831 and 1840, and later equipped with small engines, a sort of street-car system extending from 1 to 8 miles into the surrounding country.² A somewhat more elaborate road was the West Feliciana, which ran through the parish of that name from St. Francisville on the Mississippi River to Woodville, Mississippi, a distance of 20 miles. The Port Hudson and Clinton, another road from the Mississippi River, was engaged in bringing products from inland to the waterway.³ The State aided the latter in 1842 with \$500,000 in bonds.

In 1835 the legislature chartered a company with a capital of \$2,000,000, with leave to increase it to \$4,000,000, and with banking privileges in addition, to build a railroad from the Mississippi River to the rich districts of Opelousas, Lafayette, St. Martin's, and St. Mary's, and thereby secure a trade to New Orleans in the products of that opulent section of the country.⁴ The "Atchafalaya Railroad and Banking Company," as it was then called, was the beginning of a scheme which agitated the State for 20 years before it materialized. Two years later (1837) a company was formed and chartered to build a road from New Orleans to Lake Borgne, and thence to the Gulf of Mexico. The company promptly began work, and constructed about 14 miles, when it was compelled by the panic and financial depression to stop.⁵ In 1844 it was sold to a small company which transferred it to a larger company which had obtained a charter for continuing it.⁶ Another setback was received in 1845, when the inhabitants of the district, who opposed the road, created a riot in the attempt to stop construction, but the State troops put down the riot and the road proceeded and was completed to Lake Borgne in 1846.

Related to the Opelousas and Lake Borgne projects were two minor ones for the opening of the country to the west to the New Orleans market. The Attakapas Railroad was to branch from the main line of the Atchafalaya, near the Grand River, and run thence to the Mississippi. Another route, chartered in 1837, was to run from New Orleans to La Fourche and Franklin, and thence to Ope-

¹*Niles' Register*, XL, 281, June 18, 1831.

²*Hunt's Merchants' Magazine*, XI, 422, Nov. 1844.

³*Niles' Register*, LXI, 290, Jan. 8, 1842.

⁴*Ibid.*, XLVIII, 205, May 23, 1835.

⁵*DeBow's Commercial Review*, I, 84, Jan. 1846.

⁶*Niles' Register*, LXV, 342, Jan. 27, 1844; *DeBow's Commercial Review*, I, 84, Jan. 1846.

lousas and Alexandria.¹ The financial depression put an end to the project until 1846, when it was revived as part of the general scheme for developing the country between Opelousas and New Orleans. A third road was projected to run from Plaquemine to New Orleans. The second road was the only one actually constructed, and ran as far as Franklin in 1854. The project for the road from Opelousas to the Mississippi failed, although the citizens of that town offered a bonus of \$100,000 to any company which would build it.² The New Orleans and Great Western, which ran to Franklin, was begun in 1853, and opened over 17 miles in the next year. On the whole, New Orleans was more interested in the line to Memphis and Atlanta, and her citizens invested more of their capital in the stock of the New Orleans and Jackson and the Mobile and Girard. New Orleans figured that she had lost 12 per cent of the usual cotton crop since the opening of the Chattanooga Railroad; hence her anxiety to encourage roads into the cotton country.³ The Southern Railroad Convention, which met in April 1851 at New Orleans, advocated aid to the New Orleans and Jackson, the Vicksburg and Selma, the Holly Springs and Jackson (the Memphis Road), and the Memphis and Louisville. Large subscriptions to several of these were made by the city and also by the State of Louisiana. The first division of the New Orleans and Jackson was opened over 88 miles in August 1854, and the traffic was so heavy that it paid a profit from the start.⁴ This had not been expected.

There were several projects for extending roads into Texas. One of these projected extensions was to start from Vicksburg or Natchez and run to Shreveport and El Paso; another was to run from Opelousas to Huntsville, Texas, thence to Houston and Galveston. In 1853 the State passed an act making provision for assisting works of internal improvements, after the following scheme: When a company received a special charter granting State aid, it was made the duty of the State treasurer to subscribe to one-half its capital stock. This subscription was made payable in State bonds, at not less than par, bearing 6 per cent interest and running for 40 years. These were deliverable in the proportion of \$1 to every \$4 actually paid in from other sources. Should the bonds sell for more than par, the overplus was to go toward the payment of interest until the road should be able to pay dividends. If there were no overplus, the State was to pay the interest until the earnings of the company were sufficient to meet it. If dividends were earned in excess of 6 per cent the amount was to go into a fund towards purchasing the bonds. The governor and senate were given authority to appoint 3 directors, and in case of any further aid to roads the legislature was to make the same provision for meeting interest charges and payment of bonds at

¹*DeBow's Commercial Review*, I, 279-280, March 1846.

³*Ibid.*, 690-694, June 1851.

²*Ibid.*, X, 473, April 1851.

⁴*Ibid.*, XIX, 88, July 1855.

maturity. Three companies were immediately affected by this law—the New Orleans, Jackson and Great Northern, the New Orleans, Opelousas and Great Western, and the Vicksburg, Shreveport and Texas.¹

FLORIDA AND TEXAS.

There was much excitement as to railroad building in Florida in 1833 and in Texas in 1841, but little progress was made. The Tallahassee Railroad Company was selling shares in 1833 for a road from Tallahassee to St. Marks, expecting to apply for a charter the next year.² It formed the outlet for Tallahassee to the Bay of St. Mark's, or Apalachee, and was built in 1834–35. It was 23 miles long and considered very profitable. In 1835 a small road about 9 miles long was built and put in operation from the Apalachicola River to St. Joseph's Bay, but its chief object—namely, the establishment of a shipping-port for produce brought down from the Chattahoochee, Flint, and Apalachicola Rivers—was found impossible of realization, owing to the difficulties attaching to the passage of large steamers through Lake Wimico. It was abandoned in 1839.³ A third road was built about the same time from St. Joseph north to Iola, a village established on the west side of the Apalachicola River, a mile above the Chipola River. This road was 30 miles long and cost upward of \$300,000. It seems never to have been operated. The company failed in 1841, the road was abandoned, and soon afterward its rails were torn up and sold to a Georgia company. Several roads were projected in various directions, some to cross the peninsula, from St. Augustine to Cedar Keys or from St. Mary's Bay to Tampa, the route of the Atlantic and Gulf Railroad of 1851;⁴ others to connect western Florida country with the Georgia Road.⁵

The first step in railroad construction in Texas was a more or less unorganized attempt, about 1838, to promote a road. There is evidence to show that it created some stir in Houston in 1840, but a charter was not issued until 1841. It was then called the Harrisburg Railroad and Trading Company, later the Buffalo Bayou, Brazos and Colorado. It was intended to run from Harrisburg to Houston. An imminent Mexican invasion broke up the prospects of the road and it was abandoned. In 1847 it was revived, and 3 years later (February 1850) a charter was obtained and work commenced. Track-laying began in 1852, and by August 1, 1853, 20 miles were completed and opened for traffic. Several other roads were chartered in the years 1848 to 1851, including a road from Galveston to the Red River, but the State was too young and too thinly settled to have much success in railroad building.

For data relating to length of road, rates, traffic, and earnings for certain roads, prior to 1850, see tables 59 to 71.

¹*DeBow's Commercial Review*, XX, 387, March 1856.

²*Niles' Register*, XLIV, 403, Aug. 17, 1833.

³*DeBow's Commercial Review*, XIV, 316, April 1853.

⁴*Ibid.*, VIII, 88, Jan. 1850; XI, 427, Oct. 1851; XII, 80, July 1852.

⁵*Ibid.*, XVI, 207, Feb. 1854; XVIII, 260, Feb. 1855.

TABLE 59.—*Mileage constructed and length of railroads completed or in progress in Virginia, North Carolina, South Carolina, Georgia, and Florida, 1851.*¹

Railroad.	Year opened.	Constructed.	Length of road as projected.
		miles.	miles.
Richmond, Fredericksburg and Potomac....	1837	61.50	75.50
Richmond and Petersburg.....	1838	22.50	22.50
Louisa.....	1838	35	49
Richmond and Coal Mines.....	.....	12	12
Chesterfield.....	1831	13	13
Petersburg and Roanoke.....	1833	60	60
City Point.....	1838	9	9
Greensville and Roanoke.....	1838	17.66	17.66
Portsmouth and Roanoke.....	1837	78.33	78.33
Winchester and Potomac.....	1836	32	32
Experimental.....	1833	1.50	1.50
Raleigh and Gaston.....	1840	84.50	84.50
Wilmington and Raleigh.....	1840	161	161
Charleston and Hamburg.....	1833	136	136
Louisville, Cincinnati and Charleston.....	.....	.....	66
Georgia.....	1839	87.50	211.50
Central of Georgia.....	1840	100	193
Monroe.....	1839	24	96
Western and Atlantic.....	.....	.....	140
Tallahassee.....	1837	22	24
St. Joseph and Lake Wimico.....	1836	8	8
St. Joseph and Iola.....	1839	28	28
Alabama, Florida and Georgia.....	.....	.....	56.50
Total.....	.....	994	1,675.50

TABLE 60.—*Mileage constructed and length of railroads completed or in progress in Alabama, Louisiana, Mississippi, Tennessee, and Kentucky, 1851.*¹

Railroad.	Year opened.	Con-structed.	Length of road as projected.
		miles.	miles.
Montgomery and West Point.....	.....	.....	85
Wetumpka and Coosa.....	.....	.....	56
Selma and Tennessee.....	.....	.....	170
Cahawba and Marion.....	.....	.....	27
Linden and Demopolis.....	.....	.....	22
Mobile and Cedar Point.....	1837	5	26.50
Tuscumbia, Courtland and Decatur.....	.....	46	46
Pontchartrain.....	1831	4.50	4.50
New Orleans and Nashville.....	1839	22.50	88
Bath.....	1837	1.25	6
Carrolton.....	1837	7.25	7.25
Orleans-Street.....	.....	1.50	1.50
Lake Borgne.....	1838	5	25
Alexandria and Cheneville.....	1839	6	30
Baton Rouge and Clinton.....	.....	.....	30
Clinton and Port Hudson.....	1839	14	28
West Feliciana ².....	.....	.....	28
Mississippi.....	1839	25	140
Vicksburg and Jackson.....	1839	25	45
Jackson and Brandon.....	.....	.....	12
Raymond.....	.....	.....	6
Grand Gulf and Port Gibson.....	.....	.....	7
Hiwassee.....	.....	.....	97
Lagrange and Memphis.....	.....	.....	50
Somerville and Branch.....	.....	.....	13.50
Lexington and Ohio.....	1835	30.50	94.50
Portage.....	1837	1.50	1.50
Total.....	.....	195	1,148.25

¹*Railroad Journal*, quoted in *DeBow's Commercial Review*, X, 577, May 1851. The figures are given as printed in *De Bow's Review*, although not quite accurate.²7.50 miles of this road are in the State of Mississippi.

TABLE 61.—*Rates on Georgia railroads.*

I. Georgia Central Railroad: ¹	
1. General merchandise, Savannah to Macon, 191 miles:	
a. Measurement goods—boxes, hats, bonnets, furniture, shoes, saddlery, dry-goods and other measurement goods.	per cu. ft. . . \$0.13
Crockery-ware in crates, boxes, or hhds.	Do.10
b. Goods by weight—	
First class—Boxes of glass, paints, drugs, and confectionery, per 100 lbs. . .	.50
Second class—Sugar, coffee, rope, butter, cheese, lard, tobacco, leather, hides, copper, tin, sheet and hoop iron, hard and hollow ware, rice, boxes soap and candles, bagging, and other heavy articles not enumerated below.	per 100 lbs. . . .45
Third class—Flour, bacon, liquors, pork, beef, fish, tallow, and beeswax.	per 100 lbs. . . .40
Fourth class—Mill-gearing, pig and bar iron, grind and mill stones, nails, spikes, and coal.	per 100 lbs. . . .30
Barrels of beets, bread, crackers, potatoes, fruit, oysters, onions, ice, and all light barrels.	each. . . .75
Oil, molasses, per hogshead (smaller casks in proportion).	6.00
Salt, per sack, not exceeding 4 bushels. . . . .	.50
II. Macon and Western Railroad:	
1. General merchandise, Macon to Atlanta, 101 miles:	
First class—Boxes hats, boots, shoes, bonnets, furniture, and other articles as are clearly analogous to those named.	per cu. ft. . . .09
Second class—Boxes and bales of dry-goods, saddlery, glass, paints, oils, drugs, feathers, and confectionery.	per 100 lbs. . . .44
Third class—Sugar, coffee, liquor, bagging, rope, butter, cheese, tobacco, leather, hides in bales, cotton yarns, copper, tin, bar and sheet iron, hollow-ware, castings, hardware, and other heavy articles not enumerated.	per 100 lbs. . . .30
Fourth class—Flour, rice, bacon, pork, beef, fish, lard, tallow, beeswax, bales of rags, ginseng, green and dried fruit, mill-gearing, pig-iron, mill and grind stones.	per 100 lbs. . . .25
III. Western and Atlantic Railroad:	
1. General merchandise, Atlanta to Dalton, 100 miles:	
First class—Boxes hats, bonnets, and furniture	per cu. ft. . . .08
Second class—Boxes and bales of dry-goods, shoes, saddlery, glass, paint, oils, drugs, and confectionery.	per 100 lbs. . . .40
Third class—Georgia domestics, sugar, coffee, liquor, bagging, rope, butter, cheese, tobacco, leather, feathers, hides, cotton yarns, tin, sheet iron, hollow-ware, crockery, castings, hardware, marble (dressed), etc., per 100 lbs. . . . .	.25
Fourth class—Flour in sacks, rice, pork, beef, fish, lard, tallow, bacon in casks, boxes, or sacks, beeswax, bales of rags, ginseng, fruit, bar iron, marble (undressed), mill and grind stones, mill-gearing.	per 100 lbs. . . .15
IV. Georgia Railroad: ²	
1. General merchandise, Charleston to Dalton, 408 miles:	
First class—Boxes hats, bonnets, and furniture	per cu. ft. . . .28
Second class—Boxes and bales of dry-goods, saddlery, glass, paints, drugs and confectionery.	per 100 lbs. . . 1.50
Third class—Sugar, coffee, liquor, bagging, rope, cotton-yarns, tobacco, leather, hides, copper, tin, feathers, sheet-iron, hollow ware, castings, crockery, etc.	per 100 lbs. . . .85
Fourth class—Flour, rice, bacon, pork, beef, fish, lard, tallow, beeswax, bar-iron, ginseng, mill-gearing, pig-iron, and grind-stones, etc., per 100 lbs. . .	.65
Cotton.	per 100 lbs. . . .70
Molasses.	per hhd. . . 13.50
Molasses.	per bbl. . . 4.25
Salt (at 18 cents for 271 miles).	per bushel. . . .27
Salt (at 65 cents for 271 miles).	per Liverpool sack. . .98
Ploughs, corn-shellers, cultivators, straw-cutters, wheelbarrows, etc.	1.50

¹Hunt's Merchant's Magazine, XXIII, 222, Aug. 1850.

²DeBow's Commercial Review, X, 187, Feb. 1851.

TABLE 62.—Traffic and revenue of Georgia Central Railroad, November 1842 to February 1844.¹

Year.	Month.	No. of passengers.	Passage money.	Bales cotton.	U. S. mail.	Total receipts.
1842	November.....	812	\$3,496.00	8,317	\$1,085.71	\$26,067
	December.....	776	3,163.50	5,475	1,085.71	17,453
1843	January.....	803	2,545.25	7,551	1,085.71	19,294
	February.....	487	1,885.75	3,422	1,085.71	11,929
	March.....	532	2,092.50	1,127	1,085.71	7,486
	April.....	517	2,075.25	847	1,085.71	7,486
	May.....	887	3,413.50	742	1,214.25	10,107
	June.....	741	2,511.00	485	1,214.25	7,707
	July.....	715	2,192.25	48	1,715.00	8,080
	August.....	655	2,122.50	289	1,715.00	11,142
	September.....	677	2,732.00	1,985	1,715.00	21,447
	October.....	1,034	4,245.75	6,478	1,715.00	35,256
	November.....	1,425	4,854.12	10,367	1,715.00	42,612
	Aggregate (13 months).....	10,461	37,325.37	47,133	17,517.76	227,531
	Expense same period.....	....	.....	.....	.....	134,341
	Excess receipts.....	....	.....	.....	.....	93,100
1843	December.....	1,534	5,270.19	9,493	1,715.00	31,252
1844	January.....	1,527	5,671.48	10,731	1,715.00	29,758
	February.....	1,574	6,251.30	7,893	1,715.00	25,704
	Total.....	4,635	17,192.97	28,117	5,145.00	86,714

From commencement cotton season (say August 1 to March 1) receipts have been.. \$197,176.97
 For same period last year..... 116,420.97

Gain in those seven months..... 80,756.00
 Increase of bales cotton. 41 per cent; number passengers. 90 per cent; passage money, 90 per cent; total receipts. 69 per cent.

¹*Hunt's Merchants' Magazine*, X, 580, June 1844. These figures are printed as in *Hunt's Merchants' Magazine*, although apparently not quite accurate.

TABLE 63.—*Georgia Central Railroad—Passenger fare from Savannah to specified stations on route from Savannah to Macon (191 miles).*

Place.	Distance from Savannah.	Passenger fare from Savannah.	Place.	Distance from Savannah.	Passenger fare from Savannah.
	<i>miles.</i>			<i>miles.</i>	
Eden.....	21	\$0.75	Holcomb.....	100	\$3.75
Reform.....	30	1.12	Station 11.....	112	4.12
Station 4.....	40	1.50	Davisborough.....	122	4.50
Armenia.....	46	1.87	Tennille.....	136	4.87
Halcyondale.....	50	1.87	Oconee.....	147	5.25
Station 6.....	61	2.25	Emmett.....	152	5.62
Scarborough.....	70	2.62	Miles Station (160)...	160	6.00
Brinsonville.....	80	3.00	Gordon.....	170	6.37
Midville.....	90	3.37	Larksville.....	180	6.75
Station 9.....	96	3.75	Macon.....	191	7.00

Last annual report gives total resources of road, independent of road and its appurtenances, as \$388,922, and total liabilities \$359,833; earnings of road for year ending November 30 amounted to \$516,252.64; expenses \$266,450.01; net profits \$249,802.63; increase in gross earnings of road over previous year (1847), \$132,389.09.

TABLE 64.—*Georgia Central Railroad—Comparison of various branches for year just closed with previous one.*

	1847.	1848.	Increase, or decrease (—).
Up freight, through.....	\$116,400.69	\$108,211.41	—\$8,189.28
Up freight, way.....	30,427.04	32,825.49	2,398.45
Down freight, through.....	117,882.24	247,894.74	130,012.50
Down freight, way.....	28,701.43	46,583.29	17,881.86
Up passage, through.....	24,177.02	19,854.82	— 4,322.20
Up passage, way.....	13,407.05	13,534.28	127.23
Down passage, through.....	19,918.49	15,968.08	— 3,950.41
Down passage way.....	12,944.62	13,180.53	764.09
U. S. mail.....	20,005.00	19,200.00	— 805.00
Total earnings.....	383,863.58	516,252.64	132,389.09
Bales cotton, through.....	69,179	137,157	67,978
Bales cotton, way.....	18,345	31,561	13,216
Total bales cotton...	87,524	168,718	81,194

TABLE 65.—*Georgia Central Railroad. (From report of superintendent for year ending December 1, 1849.)*

Earnings of road.....	\$668,383.91
Expenses.....	337,628.87
Net profits.....	330,755.04

This is an increase in gross receipts over 1848 of \$152,131.

	1848.	1849.	Difference.
Up freight, through.....	\$108,211.41	\$167,721.49	\$59,510.08
Up freight, way.....	32,825.49	37,774.37	6,948.88
Down freight, through.....	247,894.74	304,572.86	56,678.12
Down freight, way.....	46,583.29	66,003.32	19,420.03
Up passage, through.....	19,854.82	23,345.66	2,490.84
Up passage, way.....	13,534.28	13,753.28	219.00
Down passage, through.....	15,968.08	21,611.18	5,643.10
Down passage, way.....	12,180.53	12,851.75	681.22
U. S. mail.....	19,200.00	19,750.00	550.00
Total earnings.....	516,252.64	668,383.91	152,131.27
Bales cotton, through.....	137,157	164,334	27,077
Bales cotton, way.....	31,571	39,391	7,830
Total bales cotton.....	168,728	203,725	34,907

TABLE 66.—*Georgia Central Railroad—Passengers and bales of cotton transported each month, December 1, 1848, to December 1, 1849.*

Month.	Number of passengers.					Number of bales cotton.		
	Through.		Way.		Total.	Through.	Way.	Total.
	Up.	Down.	Up.	Down.				
December.....	296	246	697	713	1,952	21,852	7,061	28,913
January.....	227	256	699	653	1,835	19,690	6,252	25,942
February.....	373	290	530	497	1,690	18,375	5,766	24,141
March.....	445	263	573	600	1,881	20,506	4,859	25,365
April.....	281	317	669	564	1,831	19,056	1,308	20,344
May.....	218	301	575	603	1,647	9,074	369	9,443
June.....	268	400	513	432	1,613	3,341	106	3,447
July.....	291	393	664	613	1,961	3,785	108	3,894
August.....	232	301	638	600	1,771	2,678	979	2,957
September.....	408	319	592	634	1,953	3,186	1,354	4,540
October.....	662	349	743	724	2,478	16,769	3,553	20,322
November.....	407	364	972	1,044	2,787	25,721	7,176	32,897
Total.....	4,108	3,799	7,865	7,677	23,449	164,334	39,391	203,725

TABLE 67.—*Georgia Central Railroad—Classification of expenses for year ending December 1, 1849.*

Maintenance of way, including salaries, etc.....	\$126,517.35
Maintenance of machinery and motive power.....	94,466.44
Maintenance of cars.....	32,040.41
Transportation expenses.....	80,213.74
Incidental expenses.....	3,490.93
Total expenses.....	336,728.87

Total number of miles run by all engines during the year, 346,240. The company has, at this time, 7 eight-wheel passenger cars, 3 eight-wheel baggage cars, 3 four-wheel luggage cars, 105 eight-wheel box-freight cars, 113 eight-wheel platform cars, and 15 four-wheel gravel cars; or a total of 246 cars.

TABLE 68.—*South Carolina Railroad—Freight rates, 1843.*

	From Charleston to—	
	Columbia.	Hamburg.
Salt per sack, not exceeding 4 bushels	\$0.40	\$0.40
Dry-goods, shoes, saddlery, boxes furniture, hats and bonnets, and all measurement goods, per cu. ft.	1.25	1.25
Bacon, bagging, beeswax, confectionery, coffee, copper, drugs, glass, hides, hardware, lard, butter, leather, molasses in barrels, mill and grind stones, oil, paints, rope, rice, sugar, tallow, tobacco, tin, and all other articles by weight, per 100 pounds . . . . .	.25	.25
Hogshead of molasses and oil . . . . .	.40	.40
Hogshead of molasses and oil if at risk of shippers . . . . .	.25	.25
Hogsheads and pipes of liquor, not exceeding 120 gallons	3.00	3.00
Quarter casks and barrels of liquor, beef and pork, tongues and fish, each . . . . .	.75	.75
Half barrels liquor, beef and pork, tongues, and fish, each . . . . .	.50	.50
Kegs of liquor, not exceeding 5 gallons, each . . . . .	.25	.25
Kegs of liquor, not exceeding 10 gallons, each . . . . .	.50	.50
Demijohns, jars, and jugs, not exceeding 2 gallons, each . . . . .	.25	.25
Demijohns, jars, and jugs, not exceeding 5 gallons, each . . . . .	.75	.75
Carboys of vitriol, each	1.25	1.25
Barrels beets, bread, crackers, flour, potatoes, fruit, oysters, onions, and ice, and all light barrels, each . . . . .	.50	.50
Half barrels beets, bread, crackers, flour, potatoes, fruit, oysters, onions, and ice, each . . . . .	.375	.375
Barrels lime by car load, each . . . . .	.50	.50
Barrels lime by less quantity, each . . . . .	.75	.75
Smith's bellows, each	1.50	1.50
Buckets and tubs in nests, each . . . . .	.50	.50
Shovels, spades, scythes, and brooms per dozen . . . . .	.375	.375
Chairs, per dozen	3.00	3.00
Rocking chairs, each . . . . .	.75	.75
Cotton-gins, fans, and mills, each	3.50	3.50
Straw cutters, each	1.50	1.50
Plows and wheelbarrows, each . . . . .	.50	.50
Collars, per dozen . . . . .	.75	.75
Close carriages and stage coaches, each	15.00	15.00
Barouches and phaetons, each	10.00	10.00
Buggies and wagons, each	7.50	7.50
Gigs, sulkeys and common Jersey wagons, or carry-alls, each	5.00	5.00
Specie, per \$1,000, each	1.00	1.00
All small packages, each . . . . .	.25	.25
<i>Domestic products.</i>		
Cotton, in round and square bales, at present rate per 100 pounds (subject to variation by bale or by weight) . . . . .	.25	.25
Cotton yarns, cotton fabrics, and indigo, per 100 pounds . . . . .	.25	.25
Grain: Oats, bran, rice-flour in sacks, per bushel . . . . .	.08	.08
Corn meal, grist, peas, beans, ground-nuts, per bushel . . . . .	.10	.10
Wheat, rye, and grass seeds, per bushel . . . . .	.125	.125
Hay, blades, and straw in bales, ¹ per 100 pounds . . . . .	.20	.20
<i>To be loaded and unloaded by the owners.²</i>		
Marl, per bushel, for first 10 miles, 5 cents; 1 cent for every 10 miles additional.		
Bricks, per 1,000, for first 10 miles, \$2; 50 cents for every 10 miles additional.		
Wood, per cord, \$1 for first 10 miles; 25 cents for every 10 miles additional.		
Spokes and staves, \$1.50 per 1,000 for first 10 miles; 25 cents every additional 10 miles.		
Shingles, 75 cents per 1,000 for first 10 miles; 25 cents for every additional 10 miles.		
Lumber, \$1.50 per 1,000 for first 10 miles; 25 cents for every additional 10 miles.		

¹If sent by ton or carload, as may be agreed upon, owners loading and unloading.²*Hunt's Merchant's Magazine*, IX, 580-581, Dec. 1843.

TABLE 69.—*South Carolina Railroad—Passengers and bales of cotton transported each month, December 1847 to November 1848, inclusive.*

Month.	Number of passengers.				Number of bales cotton.		
	Through.		Way.		Through.	Way.	Total.
	Up.	Down.	Up.	Down.			
December.....	254	210	807	726	10,458	3,081	13,539
January.....	291	206	726	644	18,205	5,841	24,049
February.....	163	101	281	248	20,180	4,301	24,481
March.....	285	209	695	560	13,741	3,269	17,010
April.....	264	429	499	503	6,754	1,065	7,819
May.....	253	334	583	555	10,962	509	11,471
June.....	170	177	535	506	6,964	534	7,298
July.....	238	399	549	511	6,526	219	6,745
August.....	357	262	501	456	6,796	489	7,285
September.....	289	171	692	483	5,454	1,037	6,491
October.....	427	333	610	617	14,339	4,839	19,178
November.....	445	241	526	576	16,778	6,574	23,352
Total.....	3,436	3,072	7,004	6,385	137,157	31,561	168,718

TABLE 70.—*South Carolina Railroad—Year ending December 1, 1848, compared with year ending December 1, 1847.*

	<i>Per cent.</i>
Decrease in up freights.....	4
Increase in down freights.....	10.5
Decrease in through passage.....	10.25
Decrease in way passage.....	12.5
Decrease in total earnings.....	34.5

TABLE 71.—*South Carolina Railroad—Freight and passenger earnings on through and way traffic, year ending December 1, 1848.*

Up freight, through.....	\$108,211.41
Up freight, way.....	32,825.48
Down freight, through.....	247,894.74
Down freight, way.....	46,583.29
Up passage, through.....	19,854.82
Up passage, way.....	13,534.28
Down passage, through.....	15,968.08
Down passage, way.....	12,180.53
U. S. mails.....	19,200.00
Total earnings.....	516,252.64
Miles run by passenger trains during year.....	140,000
By all other trains.....	206,800
Total number miles run.....	346,800

Cost per mile run, 76.7 cents.

Freight transported 1 mile on road during year is about 11,190,000, which gives 1.99 cents per ton per mile as cost of transportation.

From January 1, 1848, 2,609 bales cotton yarns and cloths manufactured in Georgia sent down this road.

CHAPTER XVI

RAILROADS IN THE WEST.¹

Economic conditions, 487. Ohio, 488. Michigan, 503. Indiana, 506. Illinois, 509. The Illinois Central, 513. Wisconsin, 547. Trans-Mississippi Roads, 549.

ECONOMIC CONDITIONS.

Railroad construction in the Middle West, like the promotion of earlier internal improvements, grew out of the interacting needs of the country across the Alleghenies for internal development and markets, and the efforts of the seaboard cities to secure the rising western trade. But the economic conditions under which the western roads grew were peculiar at that time to the section and differed essentially from those prevailing in the East. These conditions may be briefly indicated as follows: (1) sparseness of settlement; (2) absence of large cities; (3) hazardous banking and financing; (4) lack of local capital. There were also two adverse social influences that retarded development of western roads—sectional ill-feeling and the lack of confidence on the part of eastern capitalists. The Western States were often hostile to roads that were financed from the East and by their hostility expressed through their legislatures and through the public press, as well as by the uncertainty of their methods of finance, they gave just cause for the caution of prospective investors.

The sparseness of settlement and the lack of large cities operated to make returns seem uncertain to outside capital and to make the success of the demand for transportation much less sure. In the East the roads were an outgrowth of cities already powerful, but in the West there was required a more or less prolonged period for the cities to grow after the first impulse toward railroads had been carried over the mountains by contagion from eastern enthusiasm.

When railroads first became assuredly practical, the enthusiasm for canals was on the wane in the East, while in the Middle West it was almost in its first stages. These facts also had a tendency to lessen local support of railroads. When the lesser value of canals was proven, so much public and private capital was tied up in them that the railroads had to take what was left or secure funds from other sources. In the early decades, moreover, the capital of the Eastern States was absorbed by home enterprises, and not until some of this Eastern capital began to be released and the supply increased by the successful operation of the roads was there a surplus available to be applied to the development of the West. The great impetus to the building of railroads, therefore, did not come in the West until the

¹Pages 488 to 495 are compiled from Gephart, *Transportation and Industrial Development in the Middle West*.

latter half of the fifth decade, when the Baltimore and Ohio and the Pennsylvania, backed by the rivalry of their respective cities, began an active effort to tap the trade of the West by means of the railroad. This in turn stimulated the city of New York to look to its two avenues to the West, the Erie Railroad and what was later the New York Central and Hudson River Railroad. These facts, together with the rise of four western cities—Chicago, St. Louis, Indianapolis, and Cincinnati—changed the center of activity largely from the East to the West, in the latter part of our period.

OHIO.

From the time of the earliest settlement of Ohio, the people of the region were actively interested in internal improvements. Not only did Ohio stand as a gateway between the East and the West, but it also possessed a fertile soil and a variety of natural resources. Although the first important settlements were made along the natural waterways, the fertility and resources of the interior region soon attracted settlers and a demand for transportation routes increased as the possibility of abundant production was realized. The subject of transportation thus assumed such importance that the State was led to foster various schemes of improvement by the building of canals and highways, and finally railways. For this reason, and also because the State would gain much from the movement of the traffic of other regions through her territory, there was an absence of that radicalism which at certain periods characterized the early railway legislation of other States. The people of the State in their sovereign capacity and as individuals subscribed liberally to the stock of transportation companies and freely donated their lands in aid of such projects.

Facility of transportation was the one thing necessary to bring wealth to the people of Ohio. So rapid was the increase of wealth and population which resulted from the highways and canals already constructed that a spirit of enterprise was developed in the people which was peculiarly favorable to the adoption of the more modern means of transportation, the railroad. Nevertheless, although the enthusiasm for this new means of transportation was very general, the State was undertaking such large financial obligations for canal construction, and at the same time the future of railways seemed so uncertain and the element of risk apparently involved in their construction was so great, that they became, without any considerable discussion, private enterprises.

Many shared in the opinion of the Pennsylvania board of public works, that railways were greatly overrated; that they might be made to carry United States mail, passengers, and light, valuable goods when time was more important than cost of moving, but that they would never compete with waterways for the bulk of freight

traffic.¹ Others, believing that they would not receive any benefit from the numerous canals which were being constructed with State funds, saw in the railroad a means of receiving benefits equal to those conferred by canals, and therefore urged the State to subscribe to the stock of railway companies, while they prepared at the same time to further such projects by private aid.

In 1830 the first railroad charter in Ohio was granted to the Ohio and Steubenville Road. Like most of the early charters, this did not contemplate a business wholly in the hands of the incorporating company. It did, however, definitely contemplate the use of steam. Its provisions which are of special interest were briefly as follows:

(a) Authority was granted to transport, take and carry persons and property by the power and force of steam, of animals and any combination of them.

(b) Capital stock was limited to \$500,000, with the provision that no part of the capital stock or the proceeds arising therefrom should be used in banking.

(c) Power was given to take public lands.

(d) The company was authorized to regulate the time and manner in which goods and passengers should be transported thereon and the manner of collecting tolls for such transportation and to erect and maintain toll-houses and other buildings.

(e) The company was authorized "to demand and receive from all persons, using or traveling upon the railroad the following rates of toll, to wit: for every ton weight of goods or freight of any description 3 cents per mile for every mile the same shall pass upon the same road and at a ratable proportion for any greater or less quantity; for every pleasure carriage or carriages used for the conveyance of passengers 3 cents per mile in addition to the toll by weight upon the loading."

(f) All persons who should pay the prescribed toll might "with suitable and proper carriages use and travel upon the said railroad subject to such rules and regulations as the corporations were authorized to make."

(g) Any person who wilfully injured the railroad, buildings, or machines of the company should pay to the corporation three times the amount of the damage sustained.²

As a railroad, the project suffered the fate of many of its contemporaries, as it was never built. As an experiment in charter-making, however, it provided the basis for charters subsequently granted. Twelve roads were chartered in 1832 which had a number of new features. It was provided that appraisers in assessing damages arising from taking the land should set off against this the increased value of the land; the State was permitted in some cases to become a stockholder; and provisions were inserted to regulate tolls in harmony with canal tolls. Few at first supposed that the railroad would be a direct competitor of canals, yet competition soon appeared, and whenever a proposed railway promised to compete with canals, the large obligations of the State, incurred for canal construction, were preferred as an argument against granting such a charter. This

¹"Pennsylvania Board of Commissioners of Public Works," *Report*, quoted in *Ohio State Journal*, Jan. 2, 1832.

²Ohio, *Laws*, 1830, pp. 184-187.

argument did not often succeed in defeating the railroad, but it did result in submission, by some of the railway companies, to a provision in their charters whereby they agreed to pay to the State "such amounts annually as in the opinion of the board of public works would be equivalent to one-half the tolls charged by the State at the time upon like property transported by canals during the season of navigation but for the existence of the railroad." Even as late as 1847 the Cincinnati, Hamilton and Dayton Railroad agreed to a provision in its charter that—

"Whenever the revenues derived by the State from the Miami Canal shall be diminished by the operation of said road below what it now is, it shall be lawful for the Board of Public Works to impose upon all property transported upon said road such tolls as will be sufficient to replace the revenues so diminished, which tolls so imposed said company shall pay to the members of the Board of Public Works."¹

Such provisions were not very seriously observed by the companies, but were a cause of much lobbying at every session of the legislature. Charters were easily obtained; 24 companies were organized in the decade 1830–1840, and but one road was built; in the next decade 23 were chartered and 8 were built. Some of these were promoted in good faith by persons who thought them warranted by industrial conditions, but others were organized purely for speculative gains. Exaggeration of profits to be derived and extensive advertising, as well as the general eagerness for improved means of transportation, led the people to subscribe liberally to the stock of the companies. Speculators were thus able for many years to capitalize the zeal of the people, and one reason assigned for the establishment of the railroad commission in 1867 was to "diffuse such information as would enable the people to intelligently invest in railroad securities."²

Some of the earlier charters provided that, when the authorized stock was oversubscribed, the directors should scale down by striking off shares from the largest subscriptions in succession, until the number of shares should be reduced to the amount of stock offered, and in case the subscriptions, when reduced to one share each, should be still in excess, then lots were to be drawn to determine who further should be excluded.³ There is no case on record where it was necessary to resort to this procedure. On the contrary, no original subscription as applied was sufficient to place a road in operation.

Railroad conventions during the thirties were held with increasing frequency, and the first good effects of the canals only increased the enthusiasm of those who were being benefited by them and heightened the desire, on the part of those remote from canals, for some adequate means of transportation. In the northeastern section of the State there was much railway agitation, since this section had benefited very largely from the Erie Canal and from the Ohio canals, and had early

¹Ohio, *Laws*, 1847, p. 83.

²*Ibid.*, 1867, pp. 111–115.

³*Ibid.*, 1838.

perceived its advantageous position on the route of east-and-west trade. Sandusky was the pioneer city in Ohio in the actual building of railroads, and its enterprise was cited by agitators in other sections of Ohio as worthy of emulation. No other class did more to further popular subscriptions to railways than the editors of newspapers, who incited local pride by describing what other sections were doing and enlisted support by arguing that railroads would make work, by holding out the danger of control through foreign capital, and by minimizing the accidents upon the early roads.

In the East, stock subscriptions were at first solicited from house to house for some of the roads to the West, and no hope was held out for a direct return. It was expected, however, that people of New York, Philadelphia, and Baltimore would indirectly derive such benefits from the western trade that all might well contribute. When individuals subscribed to the stock, mortgages on their property were frequently given, as is shown by the report of the Bellefontaine and Indiana Railroad in 1852, which exhibits a list of town-lots and farms conveyed to the road. These properties were offered as security for a loan of \$200,000 and comprised 213 lots in different towns in several counties, and 57 farms, almost all of which contained less than 100 acres. In most cases the subscription of each individual was small compared to the total amount subscribed, but it frequently represented a large part of the subscriber's possessions. It is true that some value accrued to the owners of land along the way, yet many gave without any fair return.

Since the original stock subscriptions proved inadequate to build the roads, provisions were inserted in the old charters or attached to the new ones which gave the companies power to borrow money and to pledge their income and stock for its payment. Soon every available method was used to increase the capital stock and bonds, although this was supposed to be carefully provided for in the specific provisions of the charters and laws. Only 10 per cent of the capital stock was required to be paid in before the election of directors, who were then authorized to "borrow money on the credit of the corporation, not exceeding its authorized capitalization." This capital stock could then be increased "to such amount as may be decided to be necessary or required," and bonds could be issued to two-thirds of the authorized capitalization. As a result of such liberal terms, the inducement to build railroads wholly on credit was very great, and naturally enough "the public were deceived by boards of directors who falsified their accounts and presented reports which were not true. Subscriptions were obtained until the parties behind the scenes stepped out, leaving the innocent and deluded outsiders suffering to bear the burdens placed upon them by dishonest and stupid managers."¹

¹Ohio Railroad Commissioners, *Annual Report*, 1875, pp. 23-27.

In many cases dividends were paid in stock, for this was an easy way to save present cash, if there were any, and capitalize future earnings. Thus nearly all the early railroads in Ohio were built on an extended system of credit and a temporizing policy. Failure and insolvency of some of the companies resulted before the completion of the roads. Insolvent companies were carried through financial stresses by individual exertions only to be swallowed up and overwhelmed by the next crisis, and "out of this insolvent condition grew extravagance, speculation, gambling, and stock-jobbing in every department of railroad management."¹ If the State and local governments and the people, by popular subscription, had not come to the aid of the companies, some of the most important roads would not have been built for many years and the rapid extension of the system would have been delayed. During the decade from 1830 to 1840 little was done in actual construction and whatever progress had been made was checked by the panic of 1837.

Partly because popular stock subscriptions could not be secured in sufficient amounts, partly because the companies were not able to borrow enough money without having something tangible to offer as security, and partly because of the people's impatience to secure railroads, the law of 1837 was passed. It authorized a loan of credit by the State to railroad companies, and a subscription to the stock of turnpike, canal, and slackwater-navigation companies. Under this law, the following loans were made to railway companies:

To the Mad River and Lake Erie Railroad Company.....	\$270,000
To the Little Miami Railroad Company.....	115,000
To the Mansfield and Sandusky City Company.....	33,333
To the Ohio Railroad Company.....	249,000
To the Painesville and Fairport Railroad.....	6,182
To the Ashland and Vermilion Railroad.....	44,000
Total.....	\$717,515

The legislature thought this a large sum, but it did not prove enough to build 70 miles of road, for the cost of all the early roads was underestimated, notwithstanding that they were cheaply built with light rails and little or no ballast. This excess of actual overestimated cost, with the additional financial difficulties of the periods of inflation and depreciation of the currency, led to a demand for higher rates, and most of the roads openly disregarded those provisions of the charters and laws which limited the rates.

The loans made by the State to the last three of the above companies were entire losses; par was realized on the Little Miami loan, but most of the amount in the remaining cases was lost.² Owing to

¹Ohio Railroad Commissioners, *Annual Report*, 1868, p. 317.

²When the board of public works was authorized to sell the personal property of the Ohio Railroad Company in 1844, in order to realize something on the State's loan, subscription of stock, gift of land, and labor, which as a total amounted to \$557,736, it was reported that this property had disappeared at the dissolution sale of 1842, and they were able to find only one set of car wheels, one locomotive, and one sawmill.

numerous accusations of fraud and extravagance, the loan act was repealed in 1840. The bank troubles of the forties were responsible for a considerable opposition to the railroads, since they also were corporations against which much criticism was directed. As a result, a law very objectionable to railroads was passed in 1842, which until its repeal in 1845 discouraged investments in railway stock. The continual attempts of the railroad companies to have damages to the land written off by the benefits resulting from the existence of the road led to a law in the same year which required a deposit for damages which might result from the construction of railways.

The State debt had reached the enormous sum of \$18,668,321.61 by 1844, and there was little prospect that the State would grant further aid to railways. Yet the demand for roads was pressing, and by 1846, when prosperity returned, this demand secured expression in a law which permitted the local governments to aid private companies in building railroads. Although the State's experience had admittedly been a failure, the people needed transportation means and felt that to secure adequate facilities public aid in some form was necessary. They believed also that the local governments could and would protect better the investments of public money, since the local community would directly receive the benefit.

Although most of the special acts empowering such subscriptions by the local governments specified the amounts to be subscribed, it was not uncommon to find an act empowering the county commissioners "to subscribe to the stock of any railroad that passed through or terminated in the county." Most of the subscriptions were made only upon the vote of the people. There was practically no opposition to these bills in the legislature, for it came to be regarded as largely a local question whether such an obligation was to be assumed, and, if so, in what amounts. When it became fairly evident in 1850 that the new constitutional convention would prohibit this power, many such bills were introduced.

From an examination of laws passed during this period a total authorized subscription of \$6,878,000 has been found. This, however, did not by any means include the whole sum, since in some cases the amount of the subscription was not specified, nor does it include the subscriptions of the later period. Estimating all these subscriptions, a conservative sum for the direct subscription by the State and local governments would be \$40,000,000. The constitution of 1851 prevented the State from further loaning its credit to railroad companies, and the effect, as considered by many, is expressed as follows:

"Many of the roads are needed at the proposed points of termini and along their routes, yet it is found almost impossible to secure a stock subscription from the citizens sufficient to build the road, and in many cases not sufficient to commence the road. The constitution and laws of the State prohibit

subscription by the counties and municipalities, and the liability of every stockholder for an equal amount in addition to his stock amounts to so great a barrier as to defeat every effort to raise stock subscriptions sufficient to do the grading and masonry. In addition to this is the experience of a large majority of the companies, and especially of the short lines which depend on local traffic, that the roads will not pay. The aid and cooperation of towns and cities to whose growth and prosperity the roads so largely contribute should be given. In this way can we alone hope to compete with those States and Territories where liberal subsidies are granted, and where municipal and other corporations are authorized to aid in the construction of railways by subscribing to the capital stock."¹

The factor of personality seems to have received considerable attention from western railroad men in their effort to secure popular approval and support. The presidents were often men skilled in law or politics, selected with the expectation that their social position would go far towards popularizing the enterprise and securing the necessary means to carry forward the work. High premiums were paid for men and means to meet temporary emergencies, without knowing or regarding what the future effects would be on the interests of the company. Much was done also to create a favorable attitude among the people by selecting courteous employees who would care for the comfort of the traveler.

In the preparation of the road-bed the dirt was usually thrown up only enough to receive the ties. Most of the roads were not ballasted until long after construction, and then at first only poorly, since the equipment was light. Bridges, although they were in many cases substantial as compared with the remainder of the construction, in time proved too weak to support the heavier locomotives which came in response to the demand for a heavier load. The bridges were usually built of wood, although in some cases stone was employed. Iron bridges did not come into use until after the Civil War. Contractors for the construction work often took stock in part payment, and, in fact, the securing of a contract sometimes hinged upon the amount of stock which one or the other contractor was willing to take. Many incorporators, having exaggerated ideas of what the railways would accomplish in the carrying business, laid double tracks. Iron for the rails was frequently bought in England. Locomotives were built at the Cuyahoga Iron Works by 1850, and the first one built in Ohio is described as "exceeding in power any other engine of the same weight and as a specimen of beauty and complete finish surpassing that of any other engine that has been constructed in this country or in England." Wood was used as a fuel, for the great coal-fields of the southeastern part of the State were not reached by railroads until after 1870.

In the early period of railroads the passenger business was of greater relative importance than freight, in Ohio as well as on the

¹Ohio Railroad Commissioners, *Annual Report*, 1868, p. 285.

Atlantic coast. Passenger routes were more flexible, and, moreover, the roads were not built substantially enough to transport large amounts of merchandise. The long use of the water routes to New Orleans formed a powerful factor in retarding the developing of freight traffic, while the novelty and the rapidity of travel by railroad as compared with other modes quickly attracted many passengers.

In previous sections accounts have been given of two great railroad projects in which the inhabitants of Ohio were interested—that of the Louisville, Cincinnati and Charleston and that of the Baltimore and Ohio. The first came to nothing, and the second was long delayed. The net result of this fruitless railroad agitation of the early thirties was to strengthen the position of those who had money invested in canals or who advocated the extension of canal-building.

“The friends of canals owe much to the rival genius of the admirers of railroads for thus awakening them from the sleep of half a century to the sight of advantages in their reach, which may restore the balance now fast preponderating towards railroads.”¹

The opening of the Ohio Canal to Chillicothe had been attended by a marked rise of property values in that town, and gave encouragement to many other schemes, such as the one to unite Lake Michigan and the Illinois River, a project in 1831 estimated to cost \$125,925.² The same condition of affairs gave an upward impetus to the boat-building industry in Ohio. The debt of the State for canals amounted to \$4,657,128, and it collected tolls of \$100,112.05, of which \$94,619.15 was net. The amount of capital invested in canals and the surely increasing income from them did not leave much room for enthusiasm with a practical financial side in behalf of an untried scheme. Canals everywhere increased business and raised property values; so much was definitely known.

The legislature of 1831–32 passed 12 acts incorporating railroads. These were as follows: the Richmond, Eaton and Miami; the Mad River and Lake Erie; the Port Clinton and Lower Sandusky; the Franklin, Springborough and Wilmington; the Erie and Ohio; the Columbus, Delaware, Marion and Sandusky; the Cincinnati and Saint Louis; the Cincinnati, Harrison and Indianapolis; the Pennsylvania and Ohio; the Milan and Newark; the Milan and Columbus; the Chillicothe and Lebanon. None of these charters, save the Mad River and Lake Erie, was ever taken up, but their grouping is of economic interest. They group themselves chiefly around Cincinnati and Columbus, with a secondary center at Sandusky; none is in the eastern part of the State, and all have a generally north-and-south direction. Several of the later roads, actually built, however, followed the general lines of travel; *e. g.*, the Cincinnati, Dayton and Eastern, from Cincinnati to Sandusky. The development around these

¹*Niles' Register*, XL, 181, May 14, 1831.

²*Ibid.*, XLI, 224, Nov. 19, 1831.

independent centers in the western half of the State is in marked contrast to the development later in the eastern section by the rival efforts of the three great Atlantic ports to obtain the western trade. There had been a tentative survey made from Pittsburgh to Massillon, but no charter seems to have been granted.¹ The East was still remote. The time occupied transporting goods from New York to Cincinnati, by way of the Erie Canal, Lake Erie, and the Ohio Canal and River, was 15 days under the most favorable circumstances.²

In 1829, the Great Western Railway was planned through northern Ohio, being part of a vast speculative project from New York to the West, promoted by De Witt Clinton to pacify the counties not on the route of the Erie Canal.³ This road was to follow roughly the route of the later Erie Railroad through the southern tier of New York counties to Lake Erie, thence along the lake shore, and across Indiana and Illinois to a terminus on the Mississippi at the mouth of the Rock River. Chicago, it will be noticed, was not considered at the time. The distance was 1,050 miles, and the estimated cost \$15,000,000, or about \$15,000 per mile. This was a careful estimate for the time. Shortly afterward, however, came a second proposition, to build the whole road for less than \$1,000,000, by erecting a double line of piles, or posts, with planks laid edgewise, bolted to the posts in lieu of rails or ties. Light strap-iron rails were afterwards recommended.

The New York end of this scheme has been described under the Erie. The Ohio section obtained a charter under the name of the Ohio Railroad Company, and was organized at Painesville, April 25, 1836. The charter obtained for the company in 1835 by Nehemiah Allen, of Geauga County (now Lake), was a liberal one, giving to the company banking privileges in addition to its railroad business, a power which resulted in a heavy loss to those who accepted any of its \$300,000 worth of unredeemable currency. By this time the growing village of Chicago and the wild speculation in western lands were helping on the project. The "plunder law" of 1837 added fresh impetus to the mania for internal improvements. The Ohio Railroad's portion, as stated on a preceding page, was \$249,000—a total loss to the State. The project then contemplated a road from the Pennsylvania State line to near Toledo, 177 miles. At either end was a "paper city" being boomed by land companies—Richmond on the east and Manhattan on the west. The chief engineer of the road got out a glowing preliminary report,⁴ proving conclusively that the whole commerce of the United States, east and west, north and

¹*Niles' Register*, XLII, 80, March 31, 1832.

²*Ibid.*, XLIV, 199, May 25, 1833.

³*Cf. supra*, chap. vi, p. 163.

⁴Extended quotations from the prospectus are given by Leland, in his article, "The Ohio Railroad," in the *Magazine of Western History*, XIII, 742-756.

south, must pass along the shore of Lake Erie—and this in spite of the fact that all of the routes west of the Alleghenies were then wholly on paper. Construction began on June 19, 1839.

“For the use of the road, ground 100 feet in width was cleared. There were required 112 piles and 1,056 ties per mile, the former varying from 7 to 28 feet in length, according to the grade, and from 12 to 16 inches in diameter, while the ties were 9 feet long and 8 inches in diameter. The piles were driven by a machine, consisting of two sills 30 or 40 feet long, placed parallel with each other at a distance of 7 feet, that being the width of the track. At the forward end of these sills were erected 4 timbers, termed ‘leaders,’ 30 feet high, between which, on each side, the iron hammers, weighing one-half a ton each, were raised and let fall upon the pile. A circular saw attached to a shaft projecting between the leaders cut the pile to the proper grade, when the driver was moved, and the operation repeated. These machines employed 8 men and drove about 40 piles per day, covering some 20 rods in distance. Upon the heads of each pair of piles was fitted a tie, 8 by 8 inches, in which a gain was cut, 9 inches wide and 4 deep, the tie being pinned down through this gain with a 2-inch cedar pin, but before this was done, half a pint of salt was deposited in the auger hole of each pile, which, permeating the wood, was expected materially to preserve the same from decay. A locomotive sawmill upon the track and behind the piledriver, attended by three men, prepared the rails at the rate of 900 lineal feet per day. These rails or stringers were 8 by 8 inches, and 15 feet in length. On the wood stringers thus provided were to be placed strap-iron rails, of the weight of 25 tons to the mile. Behind all, upon the prepared track, was a boarding-house for the work hands, which moved with the rest of the establishment.”¹

The work was started mainly between Fremont and Manhattan, and in places east of the Cuyahoga River. But the repeal of the “plunder act” in 1840 and the collapse of the speculative land booms carried the road with it. Ten years later the Cleveland and Toledo and the Cleveland, Painesville and Ashtabula Roads were successfully built and were exceedingly profitable from the start.

The methods of obtaining funds for the Ohio Railroad were ingenious in the extreme. In 1836, after the organization of the company, it had a survey made from the Maumee River to the Pennsylvania line. The right-of-way was easily obtained, at little or no cost, and lands were given freely wherever a station was proposed. Between \$300,000 and \$400,000 worth of currency was printed and ready for circulation; and with a loan of \$200,000 promised from the State, the prospect for the completion of the road was good. The plan proposed by one of the directors was to invest some \$500,000 of the company's funds in the produce of the country, mainly flour, buying it at the mills and shipping it to New York, there selling it for the credit of the company, to draw against as a redemption fund for the company's circulation. A profit was thus to be made out of the high rates of exchange, even if there was none on the flour. It was believed that \$250,000 to \$300,000 could be kept in circulation,

¹Quoted in Leland, “The Ohio Railroad,” 748.

and that with this and with the loan from the State and what the stockholders could pay in, the road could be commenced at Cleveland and worked east, equipping it and running cars upon it after every 10 or 20 miles were completed. Thus a tangible property would soon be created. But dissensions arose among the directors, with accusations of dishonesty, and the road went to pieces, with no assets.

The original subscriptions to the stock of the company amounted to \$1,991,776. Of this sum only \$13,980 was paid in cash; \$8,000 or \$10,000 in labor or material, and \$533,776 in lands and town-lots. There were also donations of \$293,660 worth of lands for right-of-way, but all of these reverted to the donors if the work failed of completion. The lands received in payment of subscriptions were taken at most extravagant valuations.

When the company collapsed there was in existence some 63 miles of wooden superstructure, of which a large part was useless, even according to its original scheme, and a debt outstanding of \$80,000, due to laborers and contractors and the company's note-holders. The auditor then made an investigation, with the above results.¹ The collapse came when the company failed to pay interest on the State stock, and so forfeited its property to the State.

A connection by railroad from Cincinnati to Lake Erie was as inevitably part of that city's plans for the extension of its sphere of mercantile influence as was the attempt previously described to connect with Charleston and the intermediate country. There were two lake ports toward which Cincinnati looked, Sandusky and Cleveland. These three cities, with Columbus in the center of the State, became the focal points of railroad-building in Ohio. The section from Dayton to Sandusky was actually surveyed in 1833, but no construction was started until 1835.² The Mad River and Lake Erie was chartered in 1830 to build a road from Sandusky to Springfield. In 1838, 20 miles were in use from Sandusky, apparently the first road actually in operation in the State. In 1837 the construction of the Little Miami, apparently built under a road charter of 1836, was begun; it was 84 miles long, from Columbus to Springfield. The city of Cincinnati subscribed \$200,000, Green County \$50,000, and the State \$150,000, which gave the road a good start, and so successful was the part first opened that it did not prove difficult to obtain loans to complete it.³ In 1844 Cincinnati made a second loan of \$100,000 towards finishing the work, and with the opening of the section from Cincinnati to Xenia, in 1845, there was a continuous line of road from Cincinnati to Columbus.⁴ The road from Sandusky was in operation for over 40 miles, and in 1846 it

¹Leland, "The Ohio Railroad," 742-756.

²Niles' Register, XLV, 5, Aug. 31, 1833.

³Hunt's Merchants' Magazine, XXI, 240, Sept. 1849.

⁴Niles' Register, LXVI, 112, April 13, 1844; LXVIII, 416, Aug. 30, 1845.

reached Springfield, where it connected in the same year with the Little Miami and formed a through line from Lake Erie to the Ohio River. Both roads proved exceedingly profitable from the beginning, the Little Miami paying 5 per cent to 8 per cent on its capital of \$1,350,000.¹ The cost of the Little Miami was about \$16,000 per mile. Like all the roads of its period, it was built with a flat iron rail and its construction was very light.

In 1845 a charter was obtained for a road from Sandusky to Mansfield, a distance of 56 miles, and the road was opened the following year. It was built through the center of what was at the time the richest wheat-growing section of the country. It was capitalized at \$450,000, and the road earned \$49,499 the first year of its operation. The operating expenses were \$17,437, making the net income \$28,061. Fares averaged about 3 cents per mile.² In 1846 an extension of the road was begun from Mansfield to Newark, which it was expected would be completed in 1849. The capital of this part of the road was \$800,000. In 1848 a connection was made with the road being built from Columbus to Lake Erie at Cleveland. The Newark extension of the Mansfield and Sandusky was 115 miles long and was expected to triple the receipts of the parent road. The road from Cleveland to Columbus, via Akron, was opened in 1851.

In 1849 efforts were made to build a railroad between Cincinnati and St. Louis. Meetings were held in St. Louis on April 29, 1849, and in Cincinnati on the 13th of the same month, to arouse enthusiasm. Cincinnati subscribed \$1,000,000 and St. Louis \$500,000 towards building the road.³ This, it was felt sure, would be sufficient to begin construction, after which subscriptions of private capital could be obtained to complete the work.

In addition to these roads, some minor ones were under contract—the Findlay Railroad, a branch of the Mad River and Lake Erie, and the Greenville and Dayton, 40 miles long, from Dayton to Greenville, making 274 miles of railroad completed and in full operation and 337 in varying stages of completion.⁴ By 1850 there were 575 miles of road in operation in the State.⁵

Several other roads were either chartered and organized or were in active process of promotion; two from Cincinnati—the Hillsboro Road (a branch of the Little Miami east to Hillsboro) and the Belpre Railroad (an important line designed to connect Cincinnati with the Parkersburg branch of the Baltimore and Ohio, then in the thick of its terminus controversy). The road was chartered and organized in 1849 and promised to be very profitable. The company was then said to be merely awaiting the movement of the Baltimore and Ohio

¹*Niles' Register*, LXVIII, 221, June 7, 1845; LXXV, 360, June 6, 1849.

²*Hunt's Merchants' Magazine*, XIX, 216-217, Aug. 1848.

³*Niles' Register*, LXXV, 240, April 11, 1849.

⁴*Ibid.*, LXXV, 360, June 6, 1849; *Hunt's Merchants' Magazine*, XXI, 241, Aug. 1849.

⁵*Poor, Manual of Railroads*, I, 67.

to begin construction. The route of the road was to lie through Chillicothe and Athens to Belpre and thence to Marietta and Wheeling. It opened a hitherto untouched section of the State to the Cincinnati market, besides forming a link in the long line from St. Louis to the Atlantic seaboard.¹

The Hocking Valley, under a revival of a charter issued in 1834, was organized and a large part of the capital was subscribed. The droa extended the Mansfield Road from Newark through Lancaster, Circleville, and Chillicothe to Portsmouth on the Ohio. The Little Miami alone was, in the year 1849, doing a business of \$321,398, or more than three-fourths as much as all of that upon the State canals, the sum for the five great canals—the Ohio, the Miami and Erie, the Muskingum Improvement, the Hocking Canal, and the Walhonding—being \$462,594.57.²

TABLE 72.—*Railroads in operation in Ohio in 1853.*³

	<i>Miles.</i>		<i>Miles.</i>
Cincinnati and Cleveland	234	Findlay Branch of Mad River.....	15
Cin., Hamilton, Dayton and Sandusky..	216	Ohio and Pennsylvania.....	143
Xenia to Springfield (Little Miami)....	19	Scioto and Hocking Valley.....	40
Springfield and Columbus.....	19	Indiana and Bellefontaine.....	118
Sandusky, Mansfield and Newark.....	117	Ohio and Indiana.....	15
Columbus and Zanesville Central.....	59	Cleveland and Pittsburgh.....	99
Columbus, Piqua and Indiana.....	40	Akron Branch.....	14
Hamilton, Eaton and Richmond.....	37	Cleveland and Erie.....	75
Dayton and Miami.....	46	Toledo and Cleveland, Southern Div. ⁴ ...	88
Cincinnati and Pittsburgh.....	37	Dayton and Michigan.....	20
Cincinnati and Wilmington.....	20		
Dayton and Western.....	21	Total running.....	1,492

Of this number about 500 miles have been put in operation during 1853, and probably at least 100 miles more will be opened before January 1, 1854. For 3 or 4 years to come Ohio will open at least 500 miles a year in railroads. Even the pressure for money will do no more injury than to retard some of the weaker lines. There are about 3,500 miles of railroads undertaken in Ohio, which sooner or later will go to be finished. If no reliance can be placed on foreign capital, arrangements will be made for finishing them with domestic means. As a great deal of our railroad subscriptions is in the stock of corporations—and as the finished roads all pay well—a good deal of capital can be raised by the transfer of stock, which will prove profitable to both parties. Our local bankers also will furnish some facilities which have heretofore been used for the benefit of New York and the capital and credit of the West will gradually concentrate at home, which would be a universal benefit.

So far all of the roads mentioned have been wholly intra-State and have run principally north and south. Cincinnati, Sandusky, and Columbus were taking the lead in developing their surrounding country. But in 1850 and 1851 the influence of the great eastern lines began to be felt. That of the Baltimore and Ohio has already been mentioned. Besides this road, the Pennsylvania, the Erie, and the recently organized New York Central were seeking eagerly for western outlets. A road was opened from Cleveland to Pittsburgh in 1853, making a connection between Philadelphia and Lake Erie. A second and more important route was the Pennsylvania and Ohio

¹*Hunt's Merchants' Magazine*, XXI, 242, Aug. 1849.

²*Ibid.*, XXI, 470, Oct. 1849; XXII, 244, Feb. 1850.

³*Ibid.*, XXIX, 759-760, Dec. 1853.

⁴The northern division of this road, from Ohio City to Sandusky, is also in operation, but we have no memorandum of its length.

and its continuation, the Bellefontaine and Indiana. This route crossed almost directly west from Pittsburgh, through Canton, Wooster, Mansfield, Galion, Marion, Bellefontaine, and thence to Indiana, a distance of 263 miles. Another was the Ohio Central, from Wheeling to the Indiana State line, comprising four roads—the Central proper (from Wheeling to Columbus), then over the routes of the Columbus and Xenia, the Xenia and Dayton, and the Western.

TABLE 73.—Statistics of railroads in Ohio in 1854.¹

[From *Railroad Journal* up to February 24, 1854.]

Railroad.	Miles open.	Capital paid in.	Funded debt.	Total cost of road and equipment.	Gross earnings for last official year.	Dividends.	Price of shares.
Cleveland and Pittsburgh.	100	\$1,979,100	\$1,142,200	\$3,279,908	\$432,682	10	91
Cleveland and Toledo.	147	2,000,000	1,600,000	.....	.....	..	100
Cleveland and Erie.	95	.....	.....	.....	.....	..	...
Cleveland and Columbus.	135	3,027,000	408,200	3,655,000	777,793	12	121
Columbus, Piqua and Indiana. ...	46	.....	.....	2,000,000	.....	..	65
Columbus and Lake Erie.	61	.....	.....	.....	.....	..	...
Cincinnati, Hamilton and Dayton	60	2,100,000	500,000	2,659,653	321,793	..	...
Cincinnati and Marietta. ....	..	.....	.....	(²)	.....	..	104.25
Dayton and Western.	40	310,000	550,000	925,000	.....	..	62
Dayton and Michigan.	20	.....	.....	(²)	.....	..	75
Eaton and Hamilton.	36	.....	.....	.....	.....	..	...
Greenville and Miami.	31	.....	.....	.....	.....	..	56
Hillsboro.	37	.....	.....	(²)	.....	..	...
Little Miami.	84	2,668,402	482,000	3,169,733	667,559	10	109.25
Mansfield and Sandusky. ....	..	900,000	1,000,000	1,855,000	.....	..	...
Mad River and Lake Erie.	167	2,387,200	1,767,000	4,110,148	540,518	..	77.25
Ohio Central.	57	.....	.....	(²)	.....	..	79
Ohio and Mississippi. ....	..	.....	.....	(²)	.....	..	87
Ohio and Pennsylvania.	187	1,750,700	2,450,000	.....	.....	..	...
Ohio and Indiana. ....	..	.....	.....	(²)	.....	..	...
Scioto and Hocking Valley.	44	750,000	300,000	(²)	.....	..	...
Xenia and Columbus.	54	1,291,000	300,000	1,257,714	317,000	10	107

¹DeBow's *Commercial Review*, XVI, 648, June 1854.

²In progress.

The Lake Shore was the extension of the New York system, and 115 miles were well under construction in 1851, to connect the cities of the lake shore from Conneaut to Toledo.¹ From Toledo the Great Western Railroad was building westward to reach Chicago. The section from Sandusky to Cleveland was opened in 1854, and Toledo was reached the same year.

In 1854, in response to some popular outcry against the increase of railroads in the State, an estimate was made, by the Cincinnati *Railroad Record*, of the increase in wealth of Ohio in the 16 years during which railroad business had been conducted in the State. Total railway investments were put at a par value of \$50,000,000, market value \$35,000,000. The increase in land values was estimated at \$51,000,000. The annual gain in transportation was \$7,000,000, equal to interest on \$100,000,000, and annual gain in interest was \$1,000,000, equal to

¹Statistics of Ohio Railroads in 1851, in *Hunt's Merchants' Magazine*, XXIV, 641–642, May 1851.

interest on \$15,000,000. The aggregate value of these sums was \$201,000,000, which, subtracting \$50,000,000 as the actual cost of the road, left a clear gain in capital of \$151,000,000.¹

TABLE 74.—*Mileage of railroads completed and in progress in Ohio in 1856.*²

Railroad.	Miles.	Condition.
Ashtabula and New Lisbon.....	84	In progress.
Bellefontaine and Indiana.....	123	Complete.
Cincinnati and Chicago.....	...	In progress.
Cincinnati and Fort Wayne.....	94	Do.
Four Mile Valley.....	31	Do.
Cincinnati, Hamilton and Dayton.....	60	Complete.
Cincinnati and Mackinaw.....	430	In progress.
Cincinnati and Hillsborough.....	37	Complete.
Marietta and Cincinnati.....	258	In progress; 120 miles completed.
Cincinnati, Peru and Chicago.....	97	In progress.
Cincinnati, Wilmington and Zanesville.....	131	Complete.
Columbus and Xenia.....	55	Do.
Cleveland, Columbus and Cincinnati.....	135	Do.
Cleveland, Painesville and Ashtabula.....	95	In progress; 95 miles completed.
Cleveland and Pittsburgh.....	101	Complete.
Cleveland and Pittsburgh Extensions.....	95	Do.
Cleveland and Toledo.....	194	Do.
Cleveland and Mahoning.....	85	In progress.
Cleveland, Zanesville and Cincinnati.....	140	In progress; 61 miles completed.
Clinton Line.....	...	In progress.
Clinton Extension.....	...	Do.
Columbus, Piqua and Indiana.....	102	Complete.
Dayton and Cincinnati Short Line.....	52	In progress.
Cleveland, Painesville and Ashtabula.....	140	Do.
Northern Indiana.....	89	Complete.
Toledo and Illinois.....	76	Do.
Dayton and Michigan.....	120	In progress; 28 miles completed.
Dayton and Western.....	40	Complete.
Dayton, Xenia and Belpre.....	70	16 miles completed.
Eaton and Hamilton.....	45	Complete.
Tremont and Indiana.....	120	Do.
Greenville and Miami.....	47	Do.
Iron Railroad.....	13	Do.
Little Miami.....	84	Do.
Mad River and Lake Erie.....	153	Do.
Ohio Central.....	141	Do.
Ohio and Mississippi.....	191	In progress; 84 miles completed.
Sandusky, Mansfield and Newark.....	116	Complete.
Springfield and Columbus.....	19	Do.
Springfield, Mount Vernon and Pittsburgh....	114	In progress; 49 miles completed.
Steubenville and Indiana.....	116	Complete.
Tiffin and Fort Wayne.....	102	Do.
Scioto and Hocking Valley.....	56	Do.
Ohio and Pennsylvania.....	187	Do.
Ohio and Indiana.....	131	Do.
Cleveland, Medina and Tuscarawas.....	130	In progress.
Columbus and Hocking Valley.....	70	Do.
Pittsburgh, Maysville and Cincinnati.....	69	Do.
46 roads.....	4,687	2,593 miles completed. 2,094 miles in progress.

Some small portions of above lines run into other States; but on other hand, there are some small branches not included, which will be quite equal to them. Several of the unfinished lines are rapidly progressing.

¹Quoted in *Hunt's Merchants' Magazine*, XXXI, 502, Oct. 1854.

²The figures are given as printed in *Hunt's Merchants' Magazine*, XXXV, 766, Dec. 1856, although apparently not quite accurate.

MICHIGAN.

The first railroad built in Michigan ran from Adrian to Toledo, Ohio, in 1836.¹ So early as 1831 a company had been chartered to build a road from Detroit to St. Joseph, on Lake Michigan. The company spent \$116,902, but had no part of it in working order when, in 1837, Michigan began a series of costly experiments in State railroad-building. The first session of the Michigan State Legislature in 1837 authorized a loan to provide for a system of roads, canals, and railroads. There were to be 3 lines of railroads, to extend across the State by a northern, a central, and a southern route. In all nearly 600 miles of railroad were provided for.² The numerous charters previously granted to private companies were failures through want of funds. The State began one of these abandoned roads, that to St. Joseph, and by 1843 had two roads (the Michigan Central and Michigan Southern) in a sufficient state to yield revenues; but the financial crisis and the consequent inability to obtain capital put an end to the work and the plan was abandoned. In this year (1843) the State expended a total of \$3,585,334.24. The Michigan Central Railroad was then in running order from Detroit to Jackson, a distance of 80 miles, and was earning about 6 per cent on its cost. The Michigan Southern Road was being operated from Monroe to Adrian, 36 miles.³

About 1840 a new element entered, the young city rising out of the marshes on the shores of the Great Lakes—Chicago. The earliest short route to Chicago seems to have been via the lakes, with a railroad across southern Michigan to cut the distance around the lower peninsula. In a contemporary account of the “cheap traveling and great speed,” the time from Detroit to Jackson, 80 miles, was given as 6 hours; from Jackson to St. Joseph, 120 miles, by stage, 26 hours; from St. Joseph to Chicago by steamboat 7 hours; or for the whole distance of 269 miles, 39 hours.⁴ The through fare from Detroit to Chicago was \$8.50. This was in January 1843. By September the Central was completed to Marshall, making the time from Detroit to Chicago less than one day and greatly increasing the amount of business.⁵ The Southern Road was at the same time pushed through to Hillsdale.⁶ The same summer a road was opened from Detroit to Pontiac, the first step towards the northern route of the comprehensive scheme of 1837.⁷ It was 25 miles long. In 1844 Michigan made an effort to extend the Central to Kalamazoo. The business of the road was then showing a good increase,⁸ and by 1846 had reached Kalamazoo. Reports of the road show that in 1844 it was doing a freight business worth \$13,459.87 per month and a passenger business of \$8,682.94 (May 1844).⁹ By 1845 the State

¹ *Niles' Register*, LI, 272, Dec. 24, 1836.

² *Michigan, Laws*, 1837, LXVII, pp. 130–133.

³ *Niles' Register*, LXIII, 341, Jan. 28, 1843.

⁴ *Ibid.*, LXIV, 272, June 24, 1843.

⁵ *Ibid.*, LXVI, 444, Aug. 31, 1844.

⁶ *Ibid.*, LXIV, 276, July 1, 1843.

⁷ *Ibid.*, 345, July 29, 1843.

⁸ *Hunt's Merchants' Magazine*, X, 478, May 1844.

⁹ *Niles' Register*, LXVI, 343, July 27, 1844.

had about decided to go out of the railroad business. The profits of the Central for the previous year had been \$121,750, and had been wholly expended in the extension from Marshall to Kalamazoo. The State was behind on its interest payments and could borrow no more. The State had been forced also to take over the Palmyra and Jacksonburg on foreclosure for a debt of \$20,000, which had been loaned by the State.

The Michigan Central was by far the most prosperous of the State roads. The following analysis of its business for the years 1843 and 1844, upon which its selling value was estimated, shows some interesting figures. The year 1843 was the fifth of its operation, though the distance operated in the several years varied with the westward building of the road.¹

TABLE 75.—*Business of the Michigan Central Railroad.*

Year.	Number of passengers.	Income from passengers.	Total freight.	Total income.	Expenses.	Net profits.
1843.....	30,643	\$52,698	tons. 8,929,685	\$149,985	\$74,960	\$75,026
1844.....	52,241	83,551	10,089,056	211,169	89,419	121,129

The road was said to be earning 8 per cent in 1845.² It was sold by the State in 1846 to the Michigan Central Railroad Company for \$2,000,000, which was \$250,000 below its actual cost.³ In the same year the Michigan Southern Company bought the Southern route for \$509,000, about one-half its cost. The State debt for the roads was thus reduced to \$1,987,140. The roads had cost \$3,343,284. The northern road was a complete loss. The purchasers of the Michigan Central and Michigan Southern were to pay a tax of one-half of 1 per cent on their capital to 1851, and thereafter a tax of three-fourths of 1 per cent on all their property.⁴ In 1847 the Port Huron and Northern Michigan Company was chartered and given the right-of-way over the northern route.⁵ The eastern capitalists who bought the roads were anxious to push them out into the rapidly growing western country and to develop them for traffic. The westward portions were immediately put under contract and the roads relaid with heavier rails, and made generally more substantial. Whether the difference indicated more competent management on the part of a private company, or a natural increase in traffic, the new company showed a larger net income—\$125,826.51—in the first nine months

¹*Hunt's Merchants' Magazine*, XII, 386–387, April 1845.

²*Niles' Register*, LXVIII, 221, June 7, 1845.

³Keith, *An Historical Sketch of Internal Improvements in Michigan*, in Michigan Political Science Association, *Publications*, IV, 31–33.

⁴*Niles' Register*, LXXII, 376, Aug. 14, 1847.

⁵Keith, *An Historical Sketch of Internal Improvements in Michigan*, 36–38; *Niles' Register*, LXXI, 368, Feb. 6, 1847.

of its management than that earned by the road in the entire previous year under State management. The gross income was \$209,300.10, which was actually smaller than the previous year's total income under the State. Of this, \$146,952.55 came from freight, \$60,759.89 from passengers, and the balance from miscellaneous sources. The net earnings amounted to 15 per cent, but only 7 per cent was divided, the rest being "ploughed in" to the road.¹ Fares averaged from 3 to 4 cents per mile. From Detroit to Kalamazoo, 146 miles, the fare was \$4.40.

The following summary of freight rates is given in a contemporary magazine:² Such articles as coal, iron, manure, corn, grain, and groceries were charged 39 cents per hundred pounds; wheat was 33 cents per hundred pounds; lumber, 25 cents per hundred feet; shingles, 65 cents per hundred; heavy merchandise, such as salt, butter, sugar, beef, pork, and fish, \$1 per barrel; dry goods, 55 cents per hundred pounds; flour rated per barrel, 66 cents; whisky, beer, and cider, \$1.10 per barrel. Vehicles were rated at 95 cents per hundred pounds; horses and cattle at \$1.35 each; hogs and calves \$1.64 each; and sheep, \$1.10. These rates were for through shipments. For less distances the charges were pro rata. No parcel was accepted for any distance at less than 12½ cents.

The new company took hold of its task of development energetically. A loan of \$1,100,000 at 8 per cent was taken up by the stockholders and the proceeds put into a new station at Detroit, machine shops, rails, and rolling-stock.³ The contemporary accounts use such adjectives as sumptuous, splendid, and magnificent. It employed in regular service—not construction work—308 men, and its passenger trains ran in one year 101,863 miles. For the year 1848 its construction account totaled \$1,911,078.43; its operating account \$198,706.77. The receipts were from passengers, \$155,771.34; from freight, \$208,819.37; other sources, \$9,391.10; a total of \$373,981.81, making a net income of \$179,275.94. There were 13,409 through passengers carried.⁴ Early in 1849 the road reached Lake Michigan and connected with the lake steamers to Chicago.⁵

The three other roads in the State, the Detroit and Pontiac, the Erie and Kalamazoo, and the Southern, with a total mileage of 178 miles, were in a precarious situation up to the end of our period. Not until the junction of the Michigan Southern with the Lake Shore and its consequent merging into a great through line was the road developed. It was overshadowed by the northern route, with its apparently better connection between Buffalo and Chicago.

¹*Hunt's Merchants' Magazine*, XVII, 529, Nov. 1847.

²*Ibid.*, XVIII, 94-95, Jan. 1848.

³*Ibid.*, XX, 342-343, March 1849.

⁴The figures are given as printed in *Hunt's Merchants' Magazine*, XX, 343, March 1849, although apparently not quite accurate; *Niles' Register*, LXXV, 156, March 7, 1849.

⁵*Niles' Register*, LXXV, 256, April 18, 1849.

INDIANA.

The first mention of railroads in Indiana seems to be in 1834, when the legislature debated an appropriation of \$1,400,000 for the construction of a railway between the principal cities of the State.¹ In 1836 Indiana entered into the construction of a complete system of internal improvements, comprising canals, turnpikes, and railroads, designed to open up the remotest corners of the State to communication with the Great Lakes and Ohio and thence to the Atlantic seaports. As a part of this plan, the construction of a railroad from Madison on the Ohio River to Lafayette on the Wabash was undertaken. A section of this road was opened in 1842, but the State had unwisely entered into too many projects of this sort, and was compelled to surrender the uncompleted work to the Madison and Indianapolis Railroad Company in 1843. Over \$1,600,000 had then been expended on it. The State retained for itself a share in the net earnings, to be represented by stock proportioned upon the mileage completed before the surrender, but this was not to become payable until the lapse of 8 years. The State finally sold its interest in 1852.

The bill of 1836 appropriated \$10,000,000 for canals and railroads. It seems to have been the result of much popular enthusiasm, receiving the governor's support and passing the legislature by handsome majorities.² Six improvements were to share in the appropriation: the Wabash and Erie Canal, between Georgetown and Lafayette; the Whitewater Canal from Brookville to Lawrenceburg on the Ohio near Cincinnati; a section 23 miles long of the Madison and Lafayette Railway, from Madison on the Ohio, north; the Central Canal; the New Orleans and Vincennes Macadamized Road; and a cross-cut canal from Terre Haute to Eel Run.³

The canals were begun with great ceremony in various places. The Whitewater Canal was opened in 1836, with festivities at Brookville, and the Wabash and Erie at Maumee City in 1845.⁴ Construction progressed slowly.⁵ The amounts appropriated fell short of the amounts required, and the State bonds were not productive. By 1841 the State had expended \$7,199,449, and it was estimated that \$13,346,000 more was needed to complete the improvements. To complete them would be worth while for the State, it was argued, because these improvements formed one-fifth the total wealth of the State. In 1836 a railroad from Lawrenceburg to Indianapolis was chartered, and given State aid to the amount of \$100,000. This was increased in 1837 by \$121,000. In 1839 the Madison and Indianapolis received \$455,000 from the State.⁶ But by 1842 the State was at the

¹*Niles' Register*, XLVII, 371, Jan. 31, 1835.

²*Ibid.*, XLIX, 388, Feb. 6, 1836.

³*Ibid.*, L, 363, July 30, 1836.

⁴*Ibid.*, LI, 145, Nov. 5, 1836; LIX, 96, Oct. 10, 1840.

⁵*Ibid.*, LIX, 368, Feb. 6, 1841.

⁶*Ibid.*, LXI, 229, Dec. 11, 1841.

end of its resources. The Whitewater Canal was turned over to a private company,¹ and, as stated above, in the following year the Madison and Indianapolis was surrendered to private parties, a total loss. By 1845 this company had 50 of the 80 miles finished, with 20 miles more to be finished, according to its charter,² in the same year. The whole road was opened in 1847. In 1845 it received a loan of \$50,000 from the State.³

But these roads and canals served merely local purposes. They were sporadic outcroppings of the railroad enthusiasm of the period, without any unifying center to act as a stimulus. The Cincinnati and St. Louis Railroad was one which interested Indiana greatly. The resolutions passed by the Indianapolis Railroad Convention of 1849 show this sense of desire for an outlet on the part of the agricultural West, dovetailing with the search of the cities for a market and for commerce. These resolutions were as follows:

"Whereas, public attention has of late been directed to the importance of constructing a railroad between Saint Louis and Cincinnati, whereby in course of time a continuous railroad communication will be formed with eastern Atlantic cities, and whereas right of way for such a purpose has already been granted by States of Ohio and Indiana under liberal charters passed by the respective legislatures, and whereas the Terre Haute and Richmond railroad—created under the charter of the last legislature has already been organized, be it

"Resolved, That this convention does not doubt the practicability and ultimate completion of this great public improvement, passing as it does through one of the richest agricultural sections in the world, connecting East and West, bringing into immediate proximity the chief commercial cities of the Union, and promising richest return for their investment of capital:

"Resolved, That a committee of seven (of whom the president of this Convention shall be one) be appointed by the chair to prepare and publish an address, setting forth to the country the character, importance and practicability of this work, the commercial and agricultural resources of the country through which it passes, the great advantages it will secure to the country and to capitalists, and such other matters connected with it as may be of general importance, and that the same be prepared and published at as early a period as possible after the adjournment of this convention."⁴

In the State of Indiana itself the Madison and Indianapolis alone was complete and in running order by 1850. Eight other roads were, however, in process of construction, some partially in use. These were the Indianapolis and Terre Haute, 74 miles long; the Lafayette and Indianapolis, 70 miles long; the Indianapolis and Peru, running through Noblesville to Peru, 70 miles northeast of Indianapolis; the Indianapolis and Bellefontaine, a continuation of an Ohio road, reaching to Pittsburgh, and projected to connect Indianapolis with

¹*Niles' Register* LXI, 416, Feb. 26, 1842.

²*Hunt's Merchants' Magazine*, XII, 481, May 1845.

³*Niles' Register*, LXVIII, 221, June 7, 1845; 272, June 28, 1845.

⁴*DeBow's Commercial Review*, V, 91-92, Jan. 1848.

the East; the Edinburgh and Shelbyville, a branch of the Madison and Indianapolis, 16 miles long; the Jeffersonville and Columbus, from Jeffersonville, opposite Louisville on the Ohio, to Columbus on the Madison and Indianapolis; the Lawrenceburg and Greensburg, 35 miles long, part of the roads connecting Cincinnati and Indianapolis; and the Shelbyville and Knightstown, 26 miles in length. There were in addition two short roads into the coal regions, also built with special reference to Indianapolis.¹

TABLE 76.—*Mileage of completed and projected railways in Indiana in 1854.*²

Completed:	Miles.	In progress:	Miles
Central Michigan.....	40	Indiana and Illinois Central.....	75
Southern Michigan and Northern Indiana.....	120	Evansville and Union.....	235
New Albany and Salem.....	258	Wabash Valley.....	175
Lafayette and Indianapolis.....	66	Cincinnati, Logansport and Chicago	165
Terre Haute and Indianapolis.....	73	Gosport and Indianapolis.....	43
Evansville and Crawfordsville.....	51	Fort Wayne and Chicago.....	140
Martinsville and Franklin.....	25	Fort Wayne and Sandusky.....	18
Jeffersonville.....	77	Logansport and Pacific.....	63
Madison and Indianapolis.....	86	Marion and Mississinewa.....	84
Indianapolis and Cincinnati.....	88	Peru and Chicago.....	73
Shelbyville and Edinburg.....	16	Cincinnati and Fort Wayne.....	114
Shelbyville and Columbus.....	23	Cincinnati, Cambridge and Chicago.	130
Shelbyville and Knightstown.....	20	Ohio and Mississippi.....	125
Ohio and Mississippi.....	55	Junction.....	86
Indiana Central.....	72	Cincinnati, Union and Fort Wayne.	66
Richmond and Eaton.....	4		
Richmond and Newcastle.....	28	Total.....	1,592
Bellefontaine and Indianapolis.....	84		
Peru and Indianapolis.....	72	Contemplated roads, distances given being those within State:	
Ohio and Indiana.....	20	Fort Wayne and Detroit.....	40
		Fort Wayne and Coldwater.....	50
		Cleveland and St. Louis, air-line...	175
		Indianapolis and Cincinnati, valley line.....	82
		New Albany and Sandusky.....	112
		Fort Wayne and Southern.....	165
		Indianapolis and Vincennes.....	108
		Total.....	732
Total.....	1,278		

Apparently from the moment Indianapolis became strong enough to make itself a focal point the development of Indiana roads began. There was a total of 514 miles in operation or under construction in 1850. Two years later there were 212 miles actually in operation and 993 building. The new roads were the New Albany and Salem, connecting the Ohio River with Lake Michigan and with other roads; the Crawfordsville and Lafayette; the Evansville and Illinois; the Terre Haute and Richmond, connecting with the Ohio roads, 141 miles long and all under construction; the Richmond and Newcastle; the Martinsville and Franklin, a coal road; the Southern Michigan, on its way to Chicago, 100 miles long; the Richmond and Ohio, a junction road; and the Cincinnati and St. Louis, with 160 miles in

¹*Hunt's Merchants' Magazine*, XXI, 581-582, Nov. 1849.²*Ibid.*, XXX, 257-258, Feb. 1854.

process of construction. The northern road between Indianapolis and the cities on Lake Erie was opened in 1853, by the completion of the Bellefontaine and Indiana, connecting with the Ohio roads at Galion.¹ By 1854 there were 18 roads whose business and interests centered in Indianapolis, with a total mileage of 1,278 miles; 1,592 miles more were under construction, and 732 contemplated.²

ILLINOIS.

The first impulse toward internal improvements in Illinois seems to have been the message of Governor Bond to the first State legislature, in 1819, regarding the Illinois and Michigan Canal. In 1837 Illinois, with Michigan and Indiana, passed laws undertaking a comprehensive scheme of internal improvement. This law authorized the construction of railroads from Galena to Cairo, from Alton to Shawneetown, from Alton to Mount Carmel, from Alton to the eastern boundary of the State near Terre Haute, from Quincy to the Wabash, from Bloomington to Pekin, and from Peoria to Warsaw. It was planned also to build 3,000 miles of roads, and to improve the Kaskaskia, Illinois, Great and Little Wabash, and Rock Rivers, and \$200,000 was to be distributed as compensating bounties to those counties which were not to be directly benefited.

Owing to sectional rivalry, it was provided that the work of construction should begin simultaneously all over the State. In the summer of 1837 the fund commissioners succeeded in negotiating a loan, and work was begun before the end of the year. They had also been authorized to subscribe to the stock of the newly chartered State banks, which were to act as fiscal agents for the canal and railroad funds. The panic of 1837 caused these banks to suspend specie payments, and this suspension was legalized at a special session of the legislature. Notwithstanding this, the fund commissioners succeeded in effecting loans both in America and in Europe, some of which were put in circulation by the United States Bank under its Pennsylvania charter.

At the next legislature additional works were authorized. By the summer of 1838, the disrepute into which the State credit had fallen temporarily interfered with the making of new laws. The State had lost heavily in the bankruptcy of State banks and in the failure of Wright and Company, its London fiscal agents. But other loans were obtained and many bonds were disposed of to contractors. The work was thus continued until the people, tiring of delay and fretting under the constantly increasing burden of taxation, were glad to dispose of their railroad interests to private corporations. When in the panic of 1847 credit again completely failed and the treasury

¹*DeBow's Commercial Review*, XIV, 626-627, June 1853.

²*Hunt's Merchants' Magazine*, XXX, 257-258, Feb. 1854.

was reduced to insolvency, only one railroad had been completed. After contracting a debt of \$15,000,000 the State had, in addition to the Northern Cross Road, from Meredosia on the Illinois River to Springfield, nothing but unfinished canals and detached grades to mark the system which had been so splendidly planned.¹

There had been an earlier, unsuccessful attempt to secure a railroad in 1833. In February of that year a bill passed the Illinois legislature incorporating a company with a capital of \$500,000 and the privilege of increasing it to \$1,000,000, for the purpose of constructing a railway on the already surveyed canal-route between the Illinois River and Lake Michigan. The construction was to be in progress within two years and finished within ten, at the end of which time, if the consent of Congress were obtained, the lands granted the State for the canal were to be transferred to the road. The measure was lost through sectional prejudice.

The movement which culminated in the law of 1837 began to take shape in the legislature of 1835. The road from Chicago to Galena was then projected, one from Chicago to Vincennes, from Jacksonville to Meredosia, and from Springfield to Alton, as well as canals from Lake Michigan to the Illinois and from the Illinois to the Sangamon.² It is interesting to note that the focal point in 1835 is Chicago, but that it shifts in 1837 to Alton. Prophets of the time would undoubtedly have chosen either Alton or Milwaukee in preference to Chicago. Indeed, Chicago herself seems to have been more anxious in these early years about her lake traffic. In 1836 she boasted that since 1833, the end of her first year, the arrivals at her port had increased from 4 to 456, and their tonnage from 700 tons to 57,550, and she challenged any other town in the United States to show such an increase.³ It was not hard, in 1837, to raise \$36,000 to build a boat to ply between Chicago and St. Joseph, or to raise funds to build carriers from Chicago to Buffalo.⁴

The Springfield and Meredosia Road seems to have been opened for a part of its distance in 1839, and over the whole distance by 1841. It was leased to private parties, who abandoned it in 1843, and the State seems to have operated it until 1847, when all railroad holdings were turned over to private parties.

The rise of railroads in Illinois, as in Indiana, seems to have awaited the development of a city strong enough to dominate a considerable area. In the East such centers long preceded the railroad era; in the Middle West railroads had to await them. When in the forties Chicago began to grow, there arose a demand for the means to add

¹Illinois, *Laws*, 1836-37, pp. 121-153; Ford, *History of Illinois*, 179-198; Ackerman, *Early Illinois Railroads*, 22, 24-25; Brown, *History of Illinois*, 413-427; *Hunt's Merchants' Magazine*, XXIII, 655, Dec. 1850.

²*Niles' Register*, XLIX, 19, Sept. 12, 1835.

³*Ibid.*, LI, 274, Dec. 31, 1836.

⁴*Ibid.*, LII, 112, April 15, 1837.

to her tributary territory regions untouched by waterways. The country tributary to the Mississippi, and all the region lying between that river and Chicago, was tapped in the most logical manner by the road from Chicago to Galena, commenced in 1849 and opened over part of its route in 1850.

The Michigan Southern reached Chicago in 1852, and immediately began to push towards the Mississippi by means of the Rock Island. The Michigan Central sent its cars into the city not long afterward, thus making a two-rail connection between Chicago and the eastern seaboard. The Illinois Central is treated more at length on pages 513-547. Its branch making a direct line from Chicago to Cairo seems to have supplied a large part of the impetus to the whole road. The Aurora Extension Railway, a branch of the Galena and Chicago, was opened in 1852, and another branch was planned to Beloit, Wisconsin.

Two other important roads to the northwest were being promoted, one the Chicago and Wisconsin, to reach Janesville, Wisconsin, via Woodstock, and at Janesville to connect with the Rock River Valley Road, which extended from Fond du Lac to Janesville; the other, the Chicago, Milwaukee and Green Bay.¹ Thus the main branches of the Chicago system grew in the same manner as those of Albany or Boston.² The Galena Road seems to have been profitable from the first. It paid a dividend of 15 per cent in its first year, besides having a surplus. Its earnings totaled \$236,672.28 in 1852, and \$473,548 in 1853.³

In 1853 the Chicago and Galena Road was completed as far as Rockford and the whole of the line to Galena was under contract. The Pennsylvania and the Baltimore and Ohio Roads were backing the Chicago and Fort Wayne, and in order to reach the city another western road, the Chicago and St. Charles, was being developed with eastern capital. The Chicago and Aurora and the Central Mil-

¹*Hunt's Merchants' Magazine*, XXVI, 441, April 1852.

²"Railroad Communication with Chicago," in *Hunt's Merchants' Magazine*, XXVIII, 637, May 1853. "Railroads which now center at Chicago, and are now being constructed, which will center there within next three years, may be summed up as follows":

	Miles.
Boston, via Albany, Niagara, Detroit.....	1,000
New York, via Dunkirk, Toledo.....	900
Philadelphia, via Pittsburgh, Fort Wayne.....	800
Baltimore, via Wheeling, Columbus.....	750
Norfolk, via Cincinnati, Chicago.....	800
Charleston and Savannah, via Louisville, Indianapolis, Nashville, Evansville.	1,000
Mobile, via Cairo.....	900
St. Louis, Alton, Springfield, and Bloomington.....	250
Quincy and Military Tract.....	250
Rock Island, Peru, and Joliet.....	200
Dubuque, Galena, and Chicago.....	200
Illinois and Wisconsin, via Fond du Lac to Lake Superior.....	400
Lake Shore, Milwaukee and Green Bay.....	200

Grand total..... 7,650

³*Hunt's Merchants' Magazine*, XXVII, 115, July 1852; *DeBow's Commercial Review*, XV, 317, Sept. 1853.

tary Tract Railroad—consolidated three years afterwards with the Northern Cross Road, as the Chicago, Burlington and Quincy—were under contract from Chicago to Galesburg and was opened in the latter part of the year. The Rock Island was under contract to be completed in 1854. At the same time the Alton was in running order for 78 miles from its southern terminus.¹

DeBow, in 1854, gave an interesting table showing the increase in population and land values due to the opening of the Galena and Chicago Railroad (table 77):

TABLE 77.

Counties.	Population.		Valuation.		
	1840	1850	1840	1850	1853
Jo Daviess....	6,180	18,767	\$383,715	\$2,785,225	\$4,294,573
Winnebago....	4,609	11,737	222,630	1,564,617	3,000,339
Lake.....	2,634	15,134	95,385	1,222,088	1,955,651
Kane.....	6,551	16,242	289,565	1,442,001	3,247,846
Dupage.....	3,535	9,290	196,290	943,503	2,104,145
Cook.....	10,201	43,280	1,864,205	7,617,102	22,929,637
Boone.....	1,705	7,627	55,990	717,192	1,492,255
Kendall.....	new	7,730	.....	1,205,732	1,767,135
Carroll.....	1,023	4,586	.....	.....	.....
Ogle.....	3,479	10,020	175,555	971,230	2,201,612
Total.....	39,917	144,413	3,883,335	18,468,692	42,993,191

The figures are given as printed in *DeBow's Commercial Review*, XXII, 603, Dec. 1854, although apparently not quite accurate.

Two years later, in 1856, Hunt enumerates 11 great lines of railroads whose center was Chicago. The Chicago and Milwaukee Road, then often called the Lake Shore, connected Chicago with Milwaukee and the intermediate lake cities of Waukegan, Kenosha, and Racine. It was opened to Waukegan January 1, 1855, and to Milwaukee 16 months later. One freight and three passenger trains daily took care of its business in 1856. It had two branches, the Kenosha and Beloit and the Racine and Mississippi, from Racine to Delavan, 46 miles west.

Next came the Chicago, St. Paul and Fond du Lac, then in operation from Chicago to Barrington, 32 miles. This section, known at the time also as the Chicago and Elgin, was one of the beginnings of the Northwestern system. It was built originally on a 6-foot gage, but in June 1855 it was relaid at standard gage, at a serious expense to the company. In July of the same year it was opened to Woodstock, 52 miles. It was expected to connect with the Fond du Lac and Lake Superior, the St. Paul Branch, the Milwaukee and La Crosse, and the Milwaukee and Mississippi.

The third road was the Galena and Chicago, the "parent of the western railroad system," as Hunt calls it. West of Freeport this

¹Hunt's *Merchants' Magazine*, XXIX, 241-243, Aug. 1853, quoting *The Chicago Tribune*.

road used the tracks of the Illinois Central. It was earning, in 1855, a total of \$2,272,610.78. Its branches and connections were the Fox River Valley, the Wisconsin Central, the Prairie du Chien and La Crosse, the Beloit and Madison. The Chicago, Burlington and Quincy seems at that time to have been thought the most important road out of Chicago. Great stress was laid on the value of the road in developing the country through which it passed and on the immense amount of local freight which found a market in Chicago. Its earnings for 1855 were \$1,225,854.39. It transported in the same year 288,907 passengers, who paid \$432,570.13. The Quincy branch, from Galesburg to Quincy, was made up in part of the older Oquawka and Northern Cross Roads and was opened February 1, 1856. There was an extension of this road into Iowa by the Burlington and Missouri, 220 miles long.

Next came the Chicago and Rock Island, a road 181 miles long, noteworthy at the time for the rapidity of its construction. It was begun April 10, 1852, and opened February 22, 1854. Traffic on the road was handled by two freight and three passenger trains per day, earning \$1,327,028.95 in its first year of through passage. This road also had an extension into Iowa over the Mississippi and Missouri. There were three branch lines and extensions, the Peoria and Bureau Valley, a very important line, from Bureau on the main line to Peoria; from there an extension was planned to Hannibal. Another line was the Peoria and Oquawka.

The sixth road, the Chicago, Alton and St. Louis, has already been mentioned, as also the Illinois Central, the Michigan Southern, the Michigan Central, the Great' Western, and the Chicago and Fort Wayne.¹ There were over 2,400 miles of railroad in the State of Illinois in 1856, all having Chicago as their ultimate center. Over 2,000 miles had been built since 1852.

THE ILLINOIS CENTRAL.²

It has been said that a history of the Illinois Central Railroad is a history of Illinois. A railroad through the center of the State was one of the first projects for internal improvement proposed in the West; it was the most important part of the Illinois system of transportation of 1837; it was the first land-grant railroad; its construction in 1851 to 1857 opened up to settlers the rich interior counties of the State; and, when completed, it connected these agricultural counties with the remainder of the country and made Illinois an essential part of the economic system of the United States.

¹*Hunt's Merchants' Magazine*, XXXIV, 494-500, April 1856.

²During the earlier progress of this work it had been hoped to include in these Contributions somewhat detailed accounts of individual railway systems. It has been found impossible fully to carry out this part of the plan in the present volume. This will account for the relatively full historical recital relating to the Illinois Central.

The building of the Illinois Central Railroad and its subsequent growth were the natural results of economic and social conditions in the Middle West. A glance at the map shows that while Illinois is practically surrounded by natural waterways, the interior of the State, which is by far the most fertile portion, is without natural means of transportation.¹ Such counties as Coles, McLean, Macon, and Champaign, before the introduction of the railroad, were almost entirely isolated.

In the early history of Illinois, as previously suggested, various attempts had been made to provide a comprehensive system of internal transportation, but the results were of slight importance. The most successful of such undertakings was the Illinois-Michigan Canal from Chicago to La Salle. It was commenced about 1820, but financial difficulties prevented its completion until 1848. The canal was the most fortunate of all the enterprises started by the State and for a number of years was of great value, but it served only a limited area; its width and depth prevented the passage of large and economical canal-boats; frequent breaks in its banks or at the locks made navigation difficult even during the summer months; and ice rendered the canal useless during the winter season.²

Aside from the few rivers, the lake, the canal, and the two short railroads, local transportation did not exist. Words are lacking to describe properly the wretched condition of Illinois highways in 1850. There were a few old corduroy roads and three or four government turnpikes, but they were short and ill-kept. Elsewhere former Indian trails or newly made section roads were the only semblance of highways that existed. In summer these roads were little better than the surrounding prairies, often worse; in winter they were mere mudholes. Fortunate, indeed, was the traveler who was not compelled to help pry the coach out of the deep mud or wait until morning for a yoke of oxen to pull him out. Mails were often delayed and, during the winter storms and spring rains, not only farm-houses, but even large towns, were completely isolated. Moreover, the State had shown itself unable to remedy these evils, although the statute-books were covered with enactments declaring certain trails or mud-roads public turnpikes. Charters, almost without number, were granted private corporations, but without tangible results.³ Local enterprise was equally fruitless, and the efforts of the counties to improve the public roads generally failed.

This absence of good canal, railroad, and highway facilities greatly retarded the economic development of central Illinois. On such roads

¹The territory tributary to parts of the Kankakee and Illinois Rivers is an exception, but its extent is comparatively small.

²*Chicago Daily Democrat*, 1841-1851; Davidson and Stuve, *A Complete History of Illinois from 1673 to 1884*, chap. xl, 474-488, "The Illinois and Michigan Canal;" cf. Moses, *Illinois, Historical and Statistical*, references in index to Illinois and Michigan Canal.

³Illinois, *Session Laws*, 1837 to 1850.

as existed in Illinois in 1850 the expense of moving heavy freight for any distance was practically prohibitive, and 10 to 20 miles was as far as grain or other bulky goods could be hauled with any degree of profit. As nearly all the products of the interior counties of Illinois consisted of articles of small value compared with their bulk, this meant that an extensive network of railroads, or canals, was necessary to the proper economic development of the State. Instead of such a system of internal transportation Illinois had less than 150 miles of railroads and canals, and all portions of the State more than 10 to 20 miles back from the railroads, the canal, the lake, and the rivers were practically isolated from the remainder of the country. A farmer living in the interior of the State could carry only a small part of his crop of wheat or corn to market to be exchanged for "store-goods," and the total amount of grain received at Chicago, St. Louis, Peoria, and other centers which came from the central counties was insignificant.

The interior counties of Illinois, as stated above, were the most fertile parts of the State, and their isolation from the rest of the country had an important influence on the economic development of the Commonwealth. The earliest settlements were made by the French at Cahokia and Kaskaskia, near the Mississippi River, and until the end of the third decade nearly all subsequent settlements were likewise near the banks of the Ohio, the Mississippi, and the Illinois Rivers, especially in the southern counties. At that time the majority of the population were immigrants from Kentucky, Tennessee, and other parts of the South, or their descendants.¹ Then from 1830 to 1850 there occurred a heavy immigration into the northern and central counties, but most of these new settlers were from the Eastern States or Europe. By 1850 Illinois had a population of 850,000 and three-fourths of the inhabitants were living north of Vandalia and were of northern or European stock. Furthermore, despite the absence of good transportation, 37,000 people were in the 36 counties which possessed neither a canal, a river, nor a railroad; and the number living more than 10 miles from such means of communication must have been considerably larger.² But this population was only a fraction of what could be supported in the same counties when railroads and good turnpikes were introduced.

The great bulk of the population in 1850 was engaged in agriculture, and the inadequate system of transportation had a depressing influence on that occupation which affected all industries of the Commonwealth. Farmers living near the waterways and railroads found good

¹Greene, *Government of Illinois*, 26; cf. various addresses of C. W. Alvord, of the University of Illinois, on this subject, in publications of the Illinois State Historical Society.

²U. S. Census 1850, p. 218. The 36 counties not crossed by the Illinois-Michigan Canal, the Galena and Chicago Union, and Springfield-Sangamon Railroads, and the Illinois, Ohio, and Mississippi Rivers, had a population of 376,529 in 1850, or 44.1 per cent of the total population.

markets for their produce, but those not so favorably situated shipped little grain or meat outside the State. Only slight cultivation was necessary to have the rich prairie soil bring forth abundant crops, and the immediate needs of the farmer and his family were easily supplied. Labor-saving machinery was not in general use, and the work of gathering the crops had to be performed by hand, with farm labor scarce and commanding high wages. As a result, there was no incentive to raise large crops, while the large amount of physical work involved made it impossible for the farmer to plant or gather more than a moderate yield. Shiftless methods of farming were the natural consequence and only a small portion of the arable land was under cultivation. Out of the total area of 35,000,000 acres, slightly over 3,000,000 were planted in the five staples, wheat, corn, oats, rye, and potatoes. One-third of the entire area, or 11,500,000 acres, was still unoccupied Government land, and much of the remainder had never been broken by the plow.¹ Cultivation of fruit and vegetables was neglected and \$750,000 would cover all the orchard and market crops of the State. The production of the three leading grains, wheat, corn, and oats, was, of course, large, but corn and oats constituted 88 per cent of the yield of these three crops, as against 12 per cent for wheat. However, they were so bulky compared with their value that the entire production of both corn and oats was of little importance, except for use on the farm.² In general, prices were high, but the excessive cost of transportation and the great expense of gathering the crops resulting from poor methods of farming gave the farmer only a meager profit.

Perhaps the most profitable form of agriculture at that time was the raising of live-stock, especially swine, though stock-trains and refrigerator-cars did not exist and all meat had to be salted or pickled at or near the farm. Of course, this seriously restricted the raising of cattle and sheep, but did not affect the pork business, which enjoyed a period of prosperity seldom equaled. Over 2,000,000 swine were on the various farms and something like 1,000,000 were slaughtered each year.³ A large part of the corn crop was used for feeding cattle or hogs and sent to the market on the hoof.⁴

Mining was affected by the lack of cheap transportation to an even greater extent than agriculture. In 1850 coal-mining was carried on in all parts of the State, especially in the Danville, La Salle, Springfield, and Du Quoin districts. The mines at Danville, Du Quoin, and Springfield had been in operation for a comparatively short time and were of local importance. The La Salle field, being located on

¹U. S. Census 1850, *Compendium*, 170. Average yield in bushels per acre was: wheat, 11; rye, 14; corn, 33; oats, 29; barley, 40.

²The cost of hauling a bushel of wheat was no greater than the cost of hauling a bushel of corn, and yet the price of the former averaged about three times that of the latter.

³U. S. Census 1850, *Compendium*, 171.

⁴*Cf.* chap. iii, p. 110.

the Illinois-Michigan Canal and thus possessing good transportation facilities, was the most important district in the State. However, it was handicapped by the great cost of mining, averaging about \$1 per ton more than in the Ohio mines, which prevented it from supplying the Chicago market to any considerable extent.¹ The Belleville mines were the oldest in the State and produced nearly one-half the coal mined in Illinois. On account of their proximity to St. Louis, the mines which produced coal at a reasonable cost were very profitable. For some reason lead-mining was of less importance in 1850 than 15 to 20 years earlier. The Galena district was the only part of the State where any considerable amount of lead was mined, and even there the yield was decreasing.² Thus, both coal and lead mining were of comparatively little importance, and less than 1,000 miners were employed in the entire State in 1850.³

Illinois was primarily an agricultural State at the close of the fifth decade of the nineteenth century and a very small proportion of the population was engaged in industrial pursuits. Slightly over 3,100 different establishments existed in the State, varying in size from a small village tannery or a carpenter-shop employing 2 to 3 men to large plants such as the McCormick Company at Chicago. All together, the industries of the State had a capital of \$6,500,000, employed 12,000 persons, and produced an output valued at \$17,250,000.⁴ Meat-packing establishments, flouring-mills, distilleries, breweries, iron and steel works, woolen-mills, agricultural-implement works, ship-building plants, tanneries, and brick-works were the leading industries. Outside of the cities industrial conditions were backward, but not as primitive as many writers would have us believe. Log cabins and homespun wearing apparel were regarded as evidences of lack of progress, but the settler, even on the isolated farms of the interior, was supplied with many of the luxuries of civilized life.

The lack of internal transportation, with the accompanying isolation of the interior counties of the State, the backward agricultural conditions, and the unimportance of mining and manufacturing, had a direct influence on the trade between Illinois and the Eastern and Southern States. In the period before the Civil War there were three principal markets for the surplus products of the Northwest: (1) the North Atlantic seaboard; (2) the lower Mississippi Valley; and (3) western Europe. In 1850 there was good connection between Chicago or St. Louis and these markets. The Great Lakes and the Erie Canal afforded western grain the cheapest means of inland transportation in the country. The Mississippi River likewise offered cheap transportation to the population along its banks. The introduction

¹Foster, *Report upon the Mineral Resources of the Illinois Central Railroad*.

²Spensley, *The Mines of Jo Daviess County*.

³Foster, *Report upon the Mineral Resources of the Illinois Central Railroad*.

⁴U. S. Census 1850, *Compendium*, 179.

of the steamboat both on the Great Lakes and the rivers permitted extensive reductions in the cost of carrying such bulky goods as grain and lumber. Consequently, farm products could be sent east or south over the waterways at reasonable charges after they had been brought to a lake or river port.

However, as already noted, the lack of roads, canals, and railroads prevented the movement of grain, beef, and pork from the central counties of Illinois to either the lake or the Mississippi River. Only the counties directly on the banks of the waterways could take advantage of the low charges from Chicago or St. Louis to New York or New Orleans. In other words, the great agricultural resources of Illinois were unavailable. Illinois wheat, corn, oats, and live-stock were shipped east or south in small quantities. Although the State ranked first among all the States of the Union in the yield of grain, New York, Pennsylvania, Ohio, Indiana, Missouri, Kentucky, and Tennessee each supplied a larger portion of the southern, eastern, or European demand than did Illinois. Out of a total production of 77,000,000 bushels of the three staples, oats, corn, and wheat, less than 3,000,000 bushels were forwarded from Chicago, and the amount sent from Ohio or Mississippi River towns was not much larger. The great need was for a market, near enough at hand to be reached without the cost of transportation being utterly prohibitive, in which to sell the products of the soil and to buy the necessities required in large quantities by the increasing population. To market grain on a large scale, for instance, might be well accomplished at long distance, in New York, Philadelphia, or New Orleans; but this would fail of its purpose in general for the relatively small producer and the small purchaser. Alton had failed, as we have seen, probably because it had the river highways and possibly because it practically commanded but one port, New Orleans, which was, on account of its climate, the poorest in the United States for shipping grain. Chicago had the lakes as a steady recourse, but an insufficient one for all the year, and so was compelled to throw out feeders overland on one side and to meet the efforts of eastern cities, which were pushing their roads into western territory as fast as they could find the capital to do it.

A great central highway connecting the northern and southern counties of Illinois has always been a favorite project with the legislatures and executives of the State. As early as 1830 Governor Coles suggested that "Lake Michigan . . . might easily be tapped and the water taken by canals not only into the Illinois, but on the dividing-line between that river and the Wabash down through the center of the State."¹ Only two years later Lieutenant-Governor A. M. Jenkins proposed in the Senate that a survey be made for a central

¹*Illinois Monthly Magazine*, I, 19-29, Oct. 1830.

railroad from Cairo to Peru,¹ and, though somewhat premature, the proposal caused considerable discussion, both in and out of the legislature. By 1835 the building of the "Central" had become one of the important issues in State politics. The project was ably advocated by such newspapers as the *Sangamon Journal* and also by a number of leading citizens, prominent among them being Sidney Breese, whose 15 years of service in promoting the undertaking entitles him to be called the "Father of the Illinois Central Railroad."²

With such support it was not long before definite measures were undertaken, and on January 18, 1836, the Illinois legislature incorporated the (Illinois) Central Railroad Company to construct a railroad from "the mouth of the Ohio . . . to a point on the Illinois River at or near the termination of the Illinois-Michigan Canal."³ Fifty-nine incorporators were named and a capital of \$2,500,000 was authorized. From the first this road was regarded as peculiarly a State institution, and lest its policy should be dominated by a foreign monopoly, provision was made that no person could subscribe to more than 5 shares of stock and that at least one-fifth of the capital should be offered for sale in the State.⁴

Provision was made also that, whenever the company earned more than 12 per cent on the cost of construction for a period of 10 years, the legislature could so reduce tolls for the next 10 years that the earnings would not exceed that amount, reports being made to the State to show cost of construction and gross and net receipts.⁵ In return for this restriction on the powers of the company the legislature inserted a clause in the charter agreeing not to incorporate any competitive railroad for a period of 50 years.

However, the promoters of the railroad selected a most inopportune time for commencing this important undertaking. During the thirties the country was deeply agitated by the popular movement in favor of government aid to internal improvements, and in Illinois, after months of agitation, mass-meetings, and conventions, the movement culminated in the celebrated internal-improvement act of 1837. In response to an overwhelming popular demand, the legislature passed an act, to which reference has heretofore been made, to build an extensive network of railroads intersecting the State in all directions. The backbone of the system was a central railroad from Cairo northward, via Vandalia, Shelbyville, Decatur, Bloomington, and Savannah, to Galena, at the time the most important city in the State. There were also several cross-lines extending from the main stem to the important cities on the eastern or western boundaries. One of

¹Newton, *Early Railway Legislation in Illinois*, 7; Ackerman, *Historical Sketch of the Illinois Central Railroad*, 6, 7.

²Cf. Breese, *Early History of Illinois*, App., 303-363. In this book Mr. Breese reviews his efforts in behalf of the Illinois Central Railroad.

³Illinois, *Laws*, 1835-36, pp. 129 *et seq.*

⁴*Ibid.*, 134, sec. 14.

⁵*Ibid.*, 133, sec. 16.

these branches, extending from Shelbyville or Decatur to the State line, corresponded very closely to the Chicago and Alton under the act of 1851.

The entire system amounted to about 12,000 miles, but the estimates as to cost of construction were surprisingly low; \$3,500,000 was regarded as sufficient to build the 450 miles of the main line, while the Shelbyville and Alton branches were to cost \$650,000 and \$600,000 respectively, or from \$7,000 to \$10,000 per mile,¹ less than one-fourth what it cost the present company 15 years later. A loan, based on the credit of the State, was to provide funds, while a board of seven commissioners was appointed to manage the enterprise during its construction and after completion.³ Immediately after the passage of the act, these commissioners commenced work, and for a while it seemed as if this colossal undertaking might be finished. Grading was commenced at Cairo, Galena, and intermediate points; tens of thousands of dollars were expended on the dikes and levees at Cairo; large quantities of rails were purchased; about 40 miles of embankment north of Cairo were completed; and, all together, something like \$1,000,000 was expended on the central route and branches, although certainly not in the most effective manner. But the task was beyond the ability of the State at that time; financial difficulties prevented the floating of the necessary bonds, while extravagance and mismanagement exhausted the money already procured, and a hundred miles of grading and a few tons of iron were the only tangible results of this second attempt to construct a railroad through the center of Illinois.³

Even this failure did not deter the State or its citizens from endeavoring to complete the project, and on March 6, 1843, only six years after the passage of the internal-improvement act, the legislature incorporated the Great Western Railway Company, better known as the Holbrook Company.⁴ To understand this act it is necessary to go back six years to March 4, 1837.

On that date the Cairo City and Canal Company was incorporated, with power to hold real estate in Alexander County, especially the tract of land now included in the corporate limits of Cairo, and to carry on general industrial enterprises.⁵ Darius B. Holbrook, of New York, was elected president, and for 20 years the enterprise was dom-

¹Illinois, *Laws*, 1836-37, p. 121; Newton, *Early Railway Legislation in Illinois*, 21-23.

²Illinois, *Laws*, 1836-37, p. 137, sec. 21.

³Editorial in *Chicago Daily Democrat*, Dec. 24, 1849.

⁴Illinois, *Laws*, 1842-43, pp. 199, 203; Newton, *Early Railway Legislation in Illinois*, 33; Ackerman, *Early Illinois Railroads*, 9.

⁵Illinois, *Laws*, 1836-37, pp. 302-307. It is interesting to note that the legislature which passed the internal-improvement act is regarded as the strongest legislature ever convened in Illinois and contained such men as Lincoln, Logan, Douglas, Bissel, *et al.* The act was passed largely through an arrangement with the Springfield delegation, by which the State capital should go to that city in return for the passage of the act by their votes. Cf. chapters in Moses, *Illinois, Historical and Statistical*, and Davidson and Stuve's *History of Illinois*, relating to the internal-improvement act. The powers granted the Cairo Company by the legislature were almost unlimited and the company's acts were often in opposition to the general acts of the general assembly.

inated by his personality.¹ During the prosperous period just before the panic the company borrowed between \$2,000,000 and \$3,000,000, largely from English capitalists; purchased several thousand acres of land at the mouth of the Ohio River; established industries of all kinds; laid out an extensive city at what is now Cairo; protected it by embankments and levees; carried on a general mercantile business; and enacted ordinances for the government of the citizens of Cairo. However, the resources of the company were not equal to the demands made upon it, and the failure of the internal-improvement policy of 1840, following closely after the severe panic of 1837, forced the enterprise into bankruptcy. English investors refused further financial support and the stoppage of work on the State railroad destroyed the undeveloped industries at Cairo. The directors neglected the undertaking; the property in and near Cairo was abandoned; and for a time the place was occupied only by squatters and disreputable characters from the river boats.²

The extreme depression existing in Illinois after the panic of 1837 and the failure of the State policy prevented Mr. Holbrook from doing anything with the Cairo City and Canal Company until 1843. Realizing the possibilities of the Central Railroad, he induced the legislature to pass the Great Western Railway act of that year. According to the charter, the president and directors of the Cairo City and Canal Company were incorporated as the Great Western Railway Company and were given authority to construct a railway from Cairo to the Illinois-Michigan Canal.³ In many ways this act was quite favorable to the State. The otherwise worthless grading done in 1837 to 1840 was to be purchased at a fair valuation; 25 per cent of the net receipts from operation, after a 12 per cent dividend had been paid on the stock, was to go to the State; and the legislature could alter the charter of both the Great Western and Cairo City and Canal Companies after all the indebtedness of the former was paid. A clause was inserted in the closing section of the act surrendering to the company any public lands which might come into the possession of the State of Illinois during the life of the charter. Not even a guarantee was demanded that such lands should be used for the construction of the railroad.

For a time it seemed as if the company was seriously determined to proceed with the "Central" Railroad. Large sums were borrowed and expended in finishing the original State surveys and in completing the grading. Numerous buildings were erected at Cairo, and an

¹In nearly all newspapers references to the Cairo City and Canal Company it is spoken of as the Holbrook Company.

²*History of Cairo* (Publications of the Cairo City and Canal Company); Long, *History and Prospects of Cairo*.

³Illinois, *Laws*, 1842-43, pp. 199 *et seq.*; cf. with pp. 15 and 16. The terms of the act are peculiar, and this provision making the directors of the one company the directors of another is typical of the loose charters granted by State legislatures before the Civil War. Contrast this charter with the charter of Feb. 10, 1851.

extensive system of levees was planned and partially constructed. But conditions were not favorable and the company could not obtain capital to continue the work. Several millions had already been expended by the Cairo Company without dividend-paying results; all Illinois credit, both State and private, was under suspicion on account of the partial repudiation of the State debt; and eastern and European capitalists refused to risk further investments in Illinois. Lack of funds stopped all construction within a few months after the charter was secured and the directors finally gave up in despair. On March 3, 1845, with the consent of the company, the charter was repealed by special act of the legislature; all work done by the company reverted to the State;¹ and the third and most promising attempt to construct the "Central" Railroad ended with heavy loss to the promoters and no profit to the State.

The failure of the Great Western Railway, following closely upon the disastrous internal-improvement project of 1837 to 1840, made it evident to the legislature, as well as to local and eastern capitalists, that under the depressed condition of Illinois credit the construction of this important and expensive railroad was an utter impossibility without substantial aid from the National Government. As a result, the efforts of the State during the seven years from 1843 to 1850 were directed almost entirely towards obtaining such support.

Under these circumstances the people of the State considered themselves fortunate in having elected to the Senate of the United States, in 1843, Sidney Breese, who was regarded as the most enthusiastic advocate of the "Central." On December 23, 1843, only a few days after being sworn in as senator, he introduced into Congress a memorial of the Great Western Company praying for preemption rights to a portion of the public lands through which the proposed road would run. Although the only profit that could come to the railroad must come from selling the land at more than \$1.25 an acre, the preemption price, the measure met with so much indifference and opposition that the committee on public lands, to which the memorial was referred, refused to report a bill.²

Two years later Breese was appointed chairman of the Committee on Public Lands, and with the additional prestige and influence of that position he introduced a bill, in 1846, granting alternate sections of public land to the Northern and Central Railroads of Illinois.³ A subsequent attempt on the part of Breese likewise failed.

Fortunately for the Central project, Stephen A. Douglas entered the United States Senate in 1847, and within a short time became the recognized leader of the dominant party in that body. Like

¹Illinois, *Laws*, 1844-45, March 3, 1845.

²Ackerman, *Historical Sketch of the Illinois Central Railroad*, 10.

³*Cong. Globe*, 29th Cong., 1st sess., 208; Sanborn, *Congressional Grants of Land in Aid of Railways*, 25.

Breese, he was an ardent advocate of a railroad through Central Illinois, and believed the Federal Government should assist in its construction; but while Breese advocated merely a right of preemption (although to a private company), Douglas favored a direct grant of land, but to the State of Illinois, not to a private corporation. In this position he was seconded by the Illinois delegation in the House of Representatives, the support of which Breese had failed to secure for his project.¹ Each of the senators introduced measures in accordance with his own views. Breese presented his previous plan for a preemption right to the Cairo Company for a railroad from Cairo to Galena. On the other hand, his colleague advocated a direct grant of land to the State of Illinois, to be used in building a first-class railroad from Cairo to Galena, as in Breese's plan. In addition, he proposed that there be a branch from this main line to Chicago;² in effect this meant a trunk-line from the Great Lakes at Chicago to the Mississippi River at Cairo. At the same time the grant was to go directly to the State of Illinois, and whatever profit might come from the land would inure to the benefit of the State, not to the advantage of a private corporation. The whole plan was one of those characteristically able strokes of Douglas. From an ill-fated and ill-managed local project of one of the less important western States, the Illinois Central became a national enterprise which would benefit the entire country, and not merely a few counties in Illinois. In deference to his colleague, Breese consented to postpone his preemption bill, though he still kept it on the calendar in order that, as he said, he might call it up after the failure of the land-grant measure.³ The bill of Senator Douglas was reported favorably from the Committee on Public Lands and made a special order on May 3, 1848.

In general, the measure was supported by members from the Western States and opposed by representatives of the Eastern and Southern States.⁴ Although introduced by the Democratic leader

¹*Cong. Globe*, 30th Cong., 2d sess., 214, 723.

²*Ibid.*, 1846-47, 29th Cong., 2d sess., 41, 61.

³Breese to Douglas, Jan. 5, 1850, quoted in *Illinois State Journal*, Feb. 6, 1851; Sanborn, *Congressional Grants of Land in Aid of Railways*, 26.

⁴*Cong. Globe*, 1847-48, 30th Cong., 1st sess., 723; App., 535-537; Sanborn, *Congressional Grants of Land in Aid of Railways*, 26 et seq. The vote in the House and Senate was distributed as follows:

	For.		Against.	
	Senate.	House.	Senate.	House.
New England.....	2	10	3	5
Middle.....	2	25	1	22
South.....	2	7	3	31
Gulf.....	4	3	3	4
West (land).....	10	27	0	9
West (non-land)...	4	1	1	8
Total.....	24	73	11	79
Democrat.....	14	30	10	42
Whig.....	10	43	1	37

of the Senate, the land-grant received much better support from the Whigs than from their opponents. As distribution of the public lands in this way was distinctly a Whig policy, it was natural that the minority should favor the bill. Moreover, most of the unoccupied Government land was in the West, and representatives of States where the amount was large supported the measure, as its success meant similar grants to them later on. For the same general reasons, members from the Eastern States opposed this new policy on the ground that the whole nation and not a few States should benefit by the western lands. Senators and Representatives from the Southern and Gulf States were strict constructionists and opposed Congressional action which would assist either the North or West at the expense of the South. Most of the speeches defended or opposed the land-grant on constitutional grounds, the main point of dispute being whether Congress had a constitutional right to give away the national lands in aid of internal improvements.¹

With the members of Congress divided along the lines indicated above, the success of the bill depended upon the relative strength of the West as opposed to the East and South. Although the bulk of the population was in the Eastern and Southern States, the Western States were as numerous as the Eastern States. Since all States had an equal representation in the Senate, the passage of the bill was comparatively easy, the final vote standing 24 for as against 11 opposed to the bill.² In the House, however, representation was in proportion to population, and the large Middle and Southern States were able to defeat the act. The vote was close, and had some of the western members supported the grant more vigorously it would probably have been passed. As it was, the majority against it was only 7.³ In accordance with a previous understanding, Senator Breese again introduced his preemption bill at the short session, and though not in conformity with the views of Douglas, the latter, as a personal and political favor to his colleague, allowed it to pass the Senate, with the tacit understanding that it was to be rejected in the House of Representatives.⁴

In the six years since Senator Breese introduced his first preemption bill sentiment in both the Senate and House had become quite favorable to some kind of a land grant or preemption right in aid of the Illinois Central Railroad. Any measure would undoubtedly be of considerable value to the State of Illinois or to private parties who

¹*Cong. Globe*, 1847-48, 30th Cong., 1st sess., App., 534-537. The views of the members of Congress are gathered from speeches in the *Globe*.

²*Ibid.*, 723.

³The bill was refused a third reading by a vote of 73 to 79. *House Journals*, 1847-48, 30th Cong., 1st sess., 1270; *Cong. Globe*, 1847-48, 30th Cong., 1st sess., 1071; Sanborn, *Congressional Grants of Land in Aid of Railways*, 29, 30.

⁴Douglas to Breese, letter quoted in *Illinois State Journal*, Feb. 6, 1851.

might build the road, and the Cairo City and Canal Company determined to make use of the apparently favorable conditions. Accordingly, after the failure of the first land-grant bill, and probably in anticipation of greater success at the next session, the Cairo City and Canal Company petitioned the legislature for a renewal of their previous rights, which had been repealed by the act of March 3, 1845. Although the Holbrook companies generally were disliked throughout the State, they represented the strongest aggregation of capital in Illinois and apparently were best able to complete the Illinois Central Railroad. In recognition of this fact, the legislature, on February 10, 1849, reincorporated the Great Western Railway Company,¹ with all its former privileges, and also gave it outright the remains of the old State surveys, gradings, and embankments and a 200-foot right of way from Cairo to Galena.¹ The surprising feature of the act is that the legislature included in the charter the clause surrendering to the company whatever lands the Federal Government should grant to the State. No restriction whatever was placed on the use of these lands, and, so far as the charter was concerned, once in the possession of the corporation, they might have been used for the personal advantage of the president or directors. Moreover, the only condition imposed upon the company in return for the charter was that it should spend at least \$200,000 each year until the road was completed, and even this was vague and ill-defined.²

With this remarkable enactment of the Illinois legislature before them, it was only natural that members of Congress should hesitate to give to that State public lands which might be turned over to a speculative private corporation without materially furthering the "Central" Railroad. No one saw this more clearly than Senator Douglas, and even before the first session of the Thirty-first Congress opened, he made vigorous attempts to obtain a repeal of the obnoxious features of the charter, but at first without success. His colleague at Washington and prominent citizens of the State assisted him, and just before Congress convened he was able to induce the

¹Illinois, *Laws*, 1849, Feb. 10, pp. 89-90.

NOTE: The provision in the acts of 1843 and 1849 granting the Great Western Railroad whatever Federal lands should come into the possession of the State is one of the most peculiar ever passed by an Illinois legislature. In 1843 there was little prospect that the National Government would ever turn over lands to Illinois to aid in railroad construction, but in 1849 several bills had passed the Senate and one had passed the House giving either pre-emption or direct grants to Illinois, and it was considered almost certain the Thirty-first Congress would pass the desired legislation. At the time charters were granted giving private companies almost unlimited powers, and evidently this is an example. It is also likely that the Cairo City and Canal Company resorted to underhand methods to secure the insertion of this provision. From the bitter criticism of the provision in 1849 and 1850, after the passage of the Federal act, especially in the *Springfield Register* and *Journal*, two of the leading papers in the State, it is certain this clause could not have been inserted with the open approval of the legislature. From its incorporation until the passage of the Federal land-grant the company did practically nothing. Then, with the passage of the act of September 20, several thousand dollars was expended in and near Cairo, evidently to fulfill the legal requirements of the charter. For a full discussion of this matter the reader is referred to the files of the *Journal* and *Register*, Springfield, during the fall and winter of 1849. *Illinois Weekly State Journal*, Oct. 16, 1850.

president and directors of the Cairo City and Canal Company to execute a release of the charter of the Great Western Railway Company. The surrender was only conditional, however, and the Cairo Company insisted that the release should be accepted at the next session of the legislature and that another company be immediately incorporated to carry on the project.¹

The Great Western difficulty having been straightened out, the Illinois delegation in Congress were in a position to renew their efforts in behalf of the Illinois Central grant. At the previous election several changes were made in the personnel of the delegation, which gave new strength to the advocates of a direct grant. In the Senate, Judge Breese was succeeded by General Shields, and the new representatives were in sympathy with the plans of Douglas.

Judge Douglas was an able politician, as well as a statesman of national prominence, and the experience of the previous session showed the necessity of aggressive action. As a matter of course, the friends of the land-grant, both in and out of Congress, secured a large number of memorials and petitions requesting definite action by the Federal Government.² In addition, Senator Douglas resorted to various political bargains to insure complete success of his policy. In the previous session he proposed in addition a branch from the main line of the railroad to Chicago, and thus made the enterprise one which appealed to the interests of many eastern representatives.³ In his plans for the Thirty-first Congress he made the railroad even more comprehensive. He extended the proposed grant to the Mobile and Ohio Railroad, then endeavoring to get a foothold in southern Alabama, and to certain other southern roads. A trunk-line from Chicago to Mobile was a project which appealed to the imagination of the entire Mississippi Valley; even the strict constructionists had to admit it was a matter of more than State importance. At the same time the southern part of the plan removed the opposition of the Gulf States and secured the active support of certain northern members who

¹*Illinois State Journal*, Oct. 16, 1850.

²Ackerman, *Historical Sketch of the Illinois Central Railroad*, 17.

³The addition of the Chicago branch is interesting as showing the increased importance of northern Illinois and the district around Chicago. In the early plans the northeastern part of the State was neglected, and this addition by Douglas is a recognition of the changes which had taken place in the previous 15 years.

NOTE: There was a very bitter fight in Illinois over the release of the charter of the Great Western Company. The Cairo Company was, of course, reluctant to surrender the charter, and they were supported by many political opponents of Douglas. The company obtained considerable aid from politicians in the southern part of the State, but was almost unanimously opposed by the central and northern parts of the State. The two Springfield newspapers were the most bitter opponents of the Holbrook Company. Cf. the conflict over the passage of the repeal act of February 10, 1851. In October 1850, Mr. Holbrook, as president of the company, executed a release, but Mr. Douglas did not accept it. Cf. correspondence between Breese and Douglas in Ackerman, *Early Illinois Railroads*, app., 63-98. General Shields was a warm personal friend of Senator Douglas, while Senator Breese was not always on intimate terms with him. Shields was also one of the most popular politicians in Illinois. Among the leading supporters of the measure were Representatives Bissell, Baker, and Wentworth, of Illinois.

were very much interested in the Mobile and Ohio Railroad.¹ Douglas also removed the opposition of certain New England and Pennsylvania Congressmen by a compromise on the tariff. He cared very little about new tariff legislation, while the eastern representatives were not interested in the land-grant, but did desire a change in the tariff. A compromise was easy and the eastern Congressmen agreed to support the Illinois Central measure in return for active efforts on the part of the western members in favor of a change of tariff.

A third agreement, though of comparatively minor importance, was arranged late in the session, by which Dunleith, opposite Dubuque, Iowa, instead of Galena, became the northern terminus of the proposed road.² These various agreements and compromises materially strengthened the position of the Illinois delegation and made the passage of the land-grant act almost a certainty.

A few days before the second release was executed Senator Douglas introduced in the Senate a bill granting to Illinois alternate sections of public land for 6 miles on each side of a proposed railroad from Cairo to Galena and from Chicago to a junction with the main line. With the consent, and probably at the suggestion, of the Illinois Senators, King of Alabama added an amendment making a similar grant to the States of Mississippi and Alabama, and a little later Senator Dodge of Iowa made another amendment extending the road to Dunleith.³ With these amendments secured, the passage of the bill through the Senate was comparatively easy and the measure was approved by a vote of 26 to 14. The real opposition came in the House, but the Illinois delegation forced the Senate bill through the lower house. At times the opposition was extremely bitter, and it was only by the various agreements effected in the early part of the session that the act secured sufficient votes to be passed. Finally, a vote was taken and the bill passed the House of Representatives by a majority of 25 (table 78), the vote taking place on the 17th of September. Three days later President Fillmore signed the bill and the Illinois Central was assured, so far as the United States Congress was concerned.⁴

By the terms of this act alternate sections 6 miles on each side of the proposed railroads were given to the States of Illinois, Mississippi,

¹Sanborn, *Congressional Grants of Land in Aid of Railways*, 31; *Illinois State Journal*, Feb. 6, 1851, letter from Breese to Douglas; Wentworth, *Congressional Reminiscences*.

²Senator Dodge, of Iowa, is credited with being the originator of this extension. The change was bitterly opposed by Galena and was instrumental in causing the decline of that city. Two railroads were being projected from Dubuque in 1849, one of them the present Dubuque and Sioux City Railroad, and the extension to Dunleith made possible a through line from Chicago and Cairo to Central Iowa. The change, although of great importance to the Illinois Central, attracted little attention in Congress.

³Ackerman, *Historical Sketch of the Illinois Central Railroad*, 14-15. It should be noticed that the act of September 20, 1850, makes grants of land to the three States of unoccupied Government land inside the State limits to be used in building a railroad inside the State. This is due to the strict-constructionist views of the Democratic majority of Congress. Cf. the Union Pacific land-grant act.

⁴United States, *Statutes at Large*, IX, 466, chap. lxi.

and Alabama, to construct a railroad from Chicago to Mobile. The act, as it related to Illinois, provided for a railroad "from the southern terminus of the Illinois-Michigan Canal to a point at or near the junction of the Ohio and Mississippi Rivers, with a branch of the same to Chicago on Lake Michigan, and another, via the town of Galena, in said State, to Dubuque, in the State of Iowa." The lands in alternate even-numbered sections for 6 miles on both sides of this road were given to the State to assist this undertaking, but with the provision that the road should be completed within 10 years and that, if this were not done, all unsold lands should revert to the Federal Government, and the State should pay the preemption price of \$2.50 per acre for land already disposed of. Furthermore, the road should be a public highway, free of toll or other charges, for the transportation of any property or troops of the United States; while Congress was to decide what compensation should be given for carrying the

TABLE 78.

States.	For.		Against.	
	Senate.	House.	Senate.	House.
New England.....	1	10	4	11
Middle.....	2	28	4	22
South.....	2	8	3	23
Gulf.....	5	13	1	1
West (land).....	13	34	1	12
West (non-land)...	3	8	1	7
Total.....	26	101	14	76

mails. To compensate for the loss of land, Congress ordered that the alternate odd-numbered sections 6 miles on either side of the road, belonging to the Government, should be valued at \$2.50 per acre, instead of \$1.25 as previously. Lands already settled were to be retained by the settlers upon payment to the State of the preemption price, or the latter could recompense itself by taking other unoccupied land within 15 miles of the road.¹ The land could never be used for any purpose other than the construction of the road.

The passage of the land-grant act of September 20, 1850, marks an epoch in the history of Illinois. At last, after years of discouragement and failure, the State had in sight the means necessary to build the Illinois Central Railroad. To even the most conservative citizen 3,000,000 acres of land seemed sufficient to guarantee the construction of the road. The more sanguine looked forward to the time when the central counties of the State would be thickly settled and the land-grant had paid off all of the burdensome internal-improvement debt. Senator Douglas and the other representatives in Congress who had secured the grant were applauded from Cairo to Galena;

¹United States, *Statutes at Large*, IX, 466, chap. lxi.

mass meetings and banquets were held in their honor; and every means was taken to show the popular appreciation of their services. The influence on the general credit of Illinois was also great, and a rise of several points in the internal-improvement stock showed the importance of the grant.

The mere passage of the Federal act was only one of many problems confronting the friends of the Illinois Central. For some 14 years the questions connected with this railroad had been before the legislature and the citizens of the State, and now that success was probable all of the previous conflicts were renewed with additional strength. The most troublesome of these conflicts involved the method of construction and the route.

There were four possible ways of utilizing the land-grant, each of which had its vigorous adherents: (1) State construction of the railroad by means of the grant, along the line of the internal-improvement plan of 1837; (2) surrender of the grant to the bondholders and construction by them on terms similar to those made by the holders of canal bonds in 1840; (3) completion by the Great Western Railway Company under its charter of 1849, including the retention of all State lands; (4) creation of an entirely new private corporation and the transfer to it of the land-grant under certain restrictions and with certain payments to the State, this company to assume entire responsibility for the completion of the road.

To many citizens State construction of the Illinois Central was still a feasible project. From 1831 to 1843 the various plans for the railroad depended on Government support, and despite the collapse of the internal-improvement plan of 1837, there was considerable talk of direct construction by the legislature. The cost of building the road was underestimated, while the value of the land was overestimated. It was thought possible to build the road without recourse to bond issues and the profits from operation would then quickly retire the old State debt. But the panic of 1840 and the depressing influence of the debt were still vivid in the minds of the citizens of Illinois and they generally condemned further attempts by the State.

Another form of semi-legislative management was contained in the so-called "bond-holders' plan," which was submitted to the legislature in January 1851. As a result of the various attempts at internal improvement, Illinois had accumulated a debt of some \$15,000,000 and was unable to meet the full interest charges. In fact, the government had barely escaped repudiation and the creditors supposed it would be utterly incapable of attracting the capital necessary to construct the Illinois Central.

Construction by the Great Western Railway, or, in other words, by Mr. Holbrook and the Cairo City and Canal Company, attracted much more attention than either of the other two plans. In 1849,

as already mentioned, the legislature renewed the charter of the Great Western, including a grant to the company of whatever lands the State might receive from the Federal Government. Then, in December 1849, the directors, under pressure from Douglas, executed a release of both the charter and the grant, in the event that the legislature should accept the same at its next session and incorporate another company to carry on the enterprise. The charter of 1849 was evidently obtained with the distinct object of securing the Federal land-grant, and no work was done on the railroad until it was almost certain Congress would pass the act. Then construction work was started and it was stated that large quantities of rails were purchased in England. At the same time, active efforts were made to defeat any bill repealing the charter. It is uncertain whether this company intended to carry on the undertaking or, as Senator Douglas alleged, merely sell the charter in Europe.¹ At any rate, the opposition to the Great Western, especially in the southern part of the State, was bitter and deep-seated.²

The last plan was to turn the grant over (under proper restrictions) to a private corporation rather than the Cairo City and Canal Company. The memorial of the Boston capitalists who later built the road was the first direct proposition of the kind, but it is probable that the memorialists had suggested to the leading legislators of the State a plan along the lines of their memorial. In all probability other capitalists were also deeply interested in the railroad. However, there was no definite project of the kind before the people during November and December 1850.³

More troublesome than the method of construction was the matter of route. When Lieutenant-Governor Jenkins made his proposal in 1832, it was for a railroad from Cairo to Peru, at the junction of the canal and the Illinois River. In the internal-improvement act Galena was made the northern terminus and the route was more distinctly marked, including Vandalia, Shelbyville, Decatur, Bloomington, and Savannah. This line was retained in the charters of 1843 and 1849, and in the various bills introduced into the United States Senate by Breese.⁴ But Douglas, in his bills of 1847 and 1849, radically altered the route by extending the road to Dunleith and making a branch to Chicago; as a result, the whole question of route was reopened and every city and county of importance in the central part of the State asserted its claims. The contests over the Chicago

¹*Cf.* Letter of Douglas to Breese.

²This opposition to the Holbrook companies is evident from the newspaper discussion of the time. *Cf.* correspondence between Douglas and Breese, in Ackerman, *Early Illinois Railroads*, app., 63-98.

³None is given in any of the important State papers; if any project was before the people, it would have been given in the newspapers.

⁴*Cf.* correspondence between Breese and Douglas, in Ackerman, *Early Illinois Railroads*, app., 63-98.

and Dunleith branches were especially strenuous and the continued discussion resulted in greater confusion. The decision was necessarily left to the legislature, which transferred it to the company.¹

Congress passed the land-grant act in September 1850, and the legislature was elected the following November. On account of the release of the Great Western charter it was necessary to settle the matter at the first session of the general assembly, and, consequently, the selection of proper representatives and senators was of vital importance. As soon as it became evident that the Federal House of Representatives would act favorably on Senator Douglas's bill, the advocates of State construction and the friends and opponents of the Cairo City and Canal Company commenced an active campaign to secure a majority of the members of the legislature. Other State issues were put in the background, and the question of the land-grant and the acceptance of the release by the Great Western were the important factors in the election of members to the Sixteenth General Assembly. The newspapers of the State had numerous editorials and contributed articles defending or opposing the respective plans or emphasizing the importance of one route over another. Mass-meetings and conventions were held at various points along the line of the proposed railroad, and the excitement often was at fever heat. The controversy became bitter and personal. Individual motives were impugned; the characters of some of the leading newspaper editors, of Holbrook, Douglas, Breese, and others, were maligned; charges of bribery and fraud were frequent. On the whole, the opponents of both State ownership and of the Holbrook Company had the better of the argument. Only a few newspapers, such as the *Benton Standard* and the *Cairo Times*, and a few politicians, the most prominent of them being Sidney Breese, openly defended the Cairo City and Canal Company, or its subsidiary company, the Great Western. However, the Great Western was already in possession of the desired charter and, conditionally, of the land-grant. Thus, inaction on the part of the legislature meant success for the Holbrook party, and the Cairo City and Canal Company exerted every effort to block legislation and prevent the incorporation of a rival company. On account of many minor conflicts, it was not at such a disadvantage as indicated by newspaper editorials.²

Most of the plans had been thoroughly discussed during the campaign, and when the legislature met the first day of January 1851 its members were well-acquainted with the main points at issue. In the

¹*Illinois Weekly Journal*, Jan. 22, 1851; also numerous articles in *Chicago Daily Democrat*, *Illinois Weekly Journal*, *Illinois Daily* and *Weekly Register* during October, November, and December 1850, and January 1851; cf. correspondence between Breese and Douglas.

²The following are the most important references to the conflict between the two factions: *Illinois Daily Register*, Oct. 9, 17, 23, 30, Nov. 8, 20, Dec. 12, 1850; Jan. 15, 1851; *Illinois Weekly Journal*, Oct. 16, 30, Nov. 6, 13, 1850; Jan. 22, 1851; *Chicago Press and Tribune*, Oct. 22, 1851; also *Journals* of the House and Senate, Jan. 1-15, 1851.

organization of the house the Holbrook faction secured a temporary advantage by the election of Judge Breese as speaker, and during the first two weeks of the session they were strong enough to prevent radical action. Bills were presented in both houses repealing the charter of the Great Western, but both were strongly opposed. The senate passed a bill in regard to the Illinois Central, which did not accept the release of the Holbrook Company; the house passed a bill accepting the release and refused to adopt the senate measure.¹ A large majority of the members of each body favored the repeal of the Great Western charter, but so far in the session the Holbrook proposition was the only reasonable measure before the legislature, and many preferred to retain the Cairo Company rather than to be entirely without means of building the road.

At this state of the contest affairs were entirely altered by a memorial presented by Robert Rantoul, of Massachusetts, acting in the interest of a group of New York and Boston capitalists. In brief, the plan of the memorialists was as follows:

The legislature should create a corporation and surrender to it the Federal land-grant. In return the incorporators agreed to build a railroad "equal in all respects to the railroad running between Boston and Albany, with such improvements thereon as experience has shown to be desirable and expedient; to complete the road by July 4, 1854; and to pay the State — per cent of the gross receipts in return for the land."²

The memorialists were men of means and had had experience with railroad promotion in other parts of the country. The governor recommended the acceptance of their proposition in a special message, and most of the members of the legislature and friends of the Illinois Central believed that this memorial presented a first-class opportunity for the State.

Coincident with the transmission of this memorial Asahel Gridley introduced in the senate a bill "for an act to incorporate the Illinois Central Railroad." On February 5, J. L. D. Morrison offered a substitute for the original bill,³ and on the next day it passed by a vote of 23 to 3. Four days later it passed the house by an almost unanimous vote of 72 to 2, and was immediately signed by Governor French.⁴

¹As the leading advocate of the "Central," Senator Douglas had endeavored to secure an early acceptance of the release and continually urged such action from the time he received the final release of the Great Western. Even as early as October 1849 he had attempted to obtain action by the legislature, but without success. The matter was brought up at the special session, and Representative Denny introduced a resolution "that the committee on internal improvements be instructed to inquire into the expediency of so altering and amending or repealing the charter of the Great Western Railway as in their judgment will be best calculated to promote the interests of the State . . ."; *Illinois Daily Journal*, Oct. 31, 1849. The discussion was at times very heated, but the policy of inaction finally prevailed, it being thought that the matter could rest until the regular session of 1851; *Illinois Daily Journal*, Oct. 24, 1849.

²In the original memorial the amount paid to the State was left vacant. It was proposed in the house that 10 per cent be given, but the company, through the efforts of Robert Rantoul and Representative Bissell, managed to reduce the percentage to 7 per cent.

³Ackerman, *Early Illinois Railroads*, 39.

⁴*Illinois Weekly Journal*, Feb. 12, 1851; *House and Senate Journals*.

The passage of the charter through both houses was not so easy as the vote indicates. The main difficulty came in the selection of a route, and the legislature was finally forced to leave the exact location of the road to the incorporators.¹ Another point of conflict was the percentage to be paid the State. This was finally fixed at 7 per cent of the gross receipts, but the company was freed from paying any State or local taxes.

As passed, the bill incorporated the Illinois Central Railroad Company, with a perpetual charter, gave it the remains of the old State surveys and gradings, gave it the Federal land-grant and right-of-way, and exempted its property from taxation. In return, the railroad was obliged to complete the main line in 4 years and the branches in 6, to build the road "equal in all respects to the Great Western of Massachusetts," to hold the State free from any responsibility connected with the grant, and to pay the State 7 per cent of the gross earnings.

The chartering of a private corporation with liberal powers and the granting to it of nearly 3,000,000 acres of public land was merely a preliminary step in the building of the Illinois Central. In 1851 railroad construction was in its infancy. The largest system at that time, the New York and Erie, was only 300 miles long and the construction of a first-class trunk-line some 700 miles in length through the thinly settled interior counties of a western State involved engineering and administrative difficulties entirely new to the promoter of the early fifties. Never before in this country had such an amount of capital been expended on a single private undertaking.

From the first this final attempt to build a railroad through the center of the State was supported by some of the ablest railroad magnates of the time, men who had had abundant experience in other lines of business activity and also had the financial support necessary to push the enterprise to a successful culmination. It is doubtful whether 12 men could have been selected who, at the time, possessed the confidence of the country to a greater extent than did Robert Schuyler, Gouverneur Morris, Robert Rantoul, and the other members of the first board of directors. In general they represented the successful merchants who constituted the moneyed class of the period, a class whose activities extended into politics and government, as well as into strictly commercial enterprises.

As the *London Times* conservatively put it:

"As regards the directors in the United States . . . there is enough in the commercial position of the parties to execute full confidence that the undertaking is believed to be intrinsically sound."

With a strong group of promoters, the active work of organization followed closely upon the chartering of the company. The promoters

¹ *Illinois Weekly Journal*, Feb. 5 and 12, 1851.

were allowed 60 days to accept the charter, and upon receipt of the act steps were taken to complete an organization. On March 19, 1851, the incorporators met in New York and formally organized the Illinois Central Railroad Company by accepting the legislative act of February 10, making provision for the various requirements of the charter, and electing Robert Schuyler president.¹

Active work was not long delayed. Stocks to the value of \$1,000,000 were subscribed, later another \$1,000,000 were taken, and enough paid in to enable the treasurer to deposit the guarantee fund of \$200,000 required by the charter; arrangements were made for active prosecution of the work in Illinois; negotiations were opened with the Federal Government in regard to the land-grant; and a definite financial program was prepared.

The charter provided that work should commence on the main line not later than January 1, 1852. On March 22, or only 3 days after the organization of the company, Roswell B. Mason, the engineer and general superintendent of the New York and New Haven Railroad, was appointed engineer-in-chief and given entire charge of construction work in Illinois. At that time there were few men who had had either a practical or a theoretical training in railway civil engineering, and the selection of an efficient engineering staff was by no means an easy undertaking. But good pay, the importance of the new railroad, and the high reputation of Mr. Mason overcame the difficulty, and by the middle of May a staff of about 70 engineers had been collected and were on their way to Chicago.² The party arrived in Illinois on May 17 and the work of preliminary survey was immediately started.

Only five specific points were given in the charter, viz, Galena, Chicago, Cairo, southern terminus of the Illinois-Michigan Canal, and Dubuque, and the only other restrictions upon the route were that the line should pass within 5 miles of the northeast corner of Township 21, Range 2, east of the third principal meridian; should not vary more than 17 miles either way from a straight line from Cairo to the southern terminus of the canal; and that the Chicago branch should not begin north of the parallel of $39^{\circ} 30'$. Otherwise, the company was unrestricted in locating the road.³ As has been the case with nearly every new railroad in this country, there were bitter rivalries between various towns as to which should have the new railroad, and with the "Central" these sectional rivalries had been fanned into a fierce flame by 15 years of agitation. So intense was this competition that the legislature, as stated above, could not decide the route and left the controversy to the railroad.

¹Ackerman, *Historical Sketch of the Illinois Central Railroad*, 20; *Chicago Daily Democrat*, March 10 to 30, 1851.

²Ackerman, *Historical Sketch of the Illinois Central Railroad*, 82.

³Illinois Central Railroad, *Charter*, Feb. 10, 1851, sec. 15, paragraph 3.

Hardly had the charter been granted when rival towns commenced active agitation to secure the much-coveted railroad. For the main line from Cairo to La Salle there had been but a single route proposed since 1835—the present line—passing through Du Quoin, Vandalia, Decatur, and Bloomington, with the exception of Shelbyville. The exact “southern terminus” of the canal was in dispute between La Salle and Peru, each claiming it was the legal terminus and consequently the end of the railroad. From La Salle to Galena there were two eligible routes, via either Freeport or Savannah. As to the branch there were many possible routes, from a line parallel with the canal, joining the main line at La Salle (now occupied by the Chicago, Rock Island and Pacific Railroad), to one just west of the State line, making connection with the main stem near Jonesboro (a line just west of the present Chicago and Eastern Illinois Railroad.)¹ For the purpose of surveying the various routes, Mr. Mason divided the territory into seven general divisions, each with the usual surveying party, and within a few days after the engineers had reached Chicago the surveys were actually commenced. To the disadvantages of reconnaissance work on the frontier were added the inconveniences of Illinois spring mud and rain. Mason himself took an active part in the work and spent much time in going over the various routes to obtain first-hand information. Thus, by the middle of summer he was in a position to make a decision as to the best location.²

In reaching his conclusions he was compelled to take into consideration four important items, two of which lay somewhat outside the field of engineering: (1) since the company could not take land more than 15 miles from the tracks, it was not desirable to run the line through thickly settled regions where much of the land granted the company by the Federal Government had been preoccupied; (2) the road must be so located as to build up the largest and most profitable traffic possible; (3) wherever practicable there should be a minimum cost of operation, and all grades, curves, sections involving heavy maintenance work, etc., should be eliminated; (4) finally, the cost of construction must be confined to the lowest amount consistent with safety and good operating efficiency, avoiding wherever possible expensive rights of way, heavy masonry work, long bridges, extensive gradings, etc.

Furthermore, the whole problem was complicated by local rivalries. Local committees were appointed to exert pressure on the officials; offers of free right-of-way and liberal city franchises were made, and even railroad bridges and short sections of track promised,

¹The newspapers of this period, especially those at Chicago and Peru, are full of this rivalry between the various towns.

²Ackerman, *Historical Sketch of the Illinois Central Railroad*, 82. For an interesting description of the difficulties connected with the construction of this work the reader is referred to *Ibid.*, 83 *et seq.*

if only the railroad would build through particular districts.¹ Shelbyville was insistent upon the advantages of that place as a point on the main line, as also the junction of the Chicago Branch, while the controversies between Peru and La Salle and between Savannah and Freeport became extremely bitter. Each of these places took active measures to secure the railroad and even went so far as to institute legal proceedings to force the company to choose particular locations. In the midst of this "down-State" controversy the territory around Chicago was aroused by a rumor that the "Central" was intending to pass by that city and run its line from a junction with the Michigan Central at the State line near what is now Hammond, directly southward along the State border to Jonesboro. But threats and litigation alike had little influence upon the management and it proceeded to lay out the route without heeding the demands of the various rival towns.

The route was chosen upon its economic merits and in the main was the most direct and shortest of the possible routes. From Cairo to Freeport the road was as straight as practicable, with slight variations to include the important towns of Vandalia, Decatur, Bloomington, La Salle, and Mendota, and the stretch of track south of La Salle extends 60 miles without a curve. The Chicago Branch, from the junction with the main line at Centralia, was also almost straight, and for the entire distance of 250 miles only three curves (and those of large radius) were necessary. In selecting the route from Dixon to Galena, the preference was given to Freeport instead of Savannah; and the present line of the Chicago branch was decided upon in preference to the line farther east. With the various disputed points decided, the total length, according to Mason's first report, was 699 miles.²

The questions connected with the route having been settled, the engineers gave their entire time to completing the surveys and preparing the preliminary estimates as to cost of construction. Work progressed rapidly, and by the first of September 1851, a preliminary report covering both amount and cost of construction work was submitted to the president. According to the charter, the road was to be first-class in every respect, equal to the Great Western Railway of Massachusetts, and the estimates were prepared on this basis. Heavy T-rails, light grades, easy curves, well-built embankments and fills, ample cuts, and brick or stone buildings were to be provided, and everything was to be of the highest standard consistent with the light traffic conditions prevailing on a western railroad. Although

¹*Chicago Daily Democrat*, July 23, 1851; May 15, 1851. The question of a route for the railroad was taken up all over the State, and papers as far away from the contest as Belleville and Alton had many accounts of offers of franchises, rights-of-way, etc., e. g., *Belleville Advocate*, Feb. to Sept. 1851.

²Report of President Schuyler to directors, Sept. 12, 1851, in *Documents relating to the Organization of the Illinois Central Railroad*, 52-59.

built through the level prairies of Illinois, an average of 30,000 cubic yards of earth was to be used per mile on embankments and fills. Including equipment and all construction expenditures, the total cost was estimated at \$16,537,212, or \$23,700 per mile. Even this liberal amount was not sufficient, and the final cost exceeded the preliminary figures by some \$10,000,000.¹

The surveys were hastened as much as possible, but the final results were submitted none too soon. According to the charter, the main line was to be completed within 4 years from February 10, 1851, and the branches within 6 years, while work on the main line was to be commenced by January 1, 1852; therefore, it was imperative that the construction should not be delayed.² Nor was the undertaking an easy one to complete within this short period. Large construction companies did not then exist; rails, chairs, fastenings, and bridge iron had to be imported from England, and other supplies carried west from New England, New York, and Pennsylvania; the amount of grading was very great, and labor far from abundant.³ Thus, even aside from any financial difficulties, the question of building the road within the time-limit was perplexing, and the directors, as well as Mason, were forced to pay close attention to construction work in Illinois.

Among the various questions which occupied the attention of the directors was the one "by whom and in what way should the road be built." As early as April 23, 1851, Mr. Franklin, for several years railroad engineer for the Russian Government, offered to build the Illinois Central Railroad and take bonds in payment on liberal terms. Even before this date it was rumored that private corporations were willing to undertake the construction of large portions of the road.⁴ But the work was entirely beyond the capacity of any private construction company, and the officials of the Illinois Central, early in 1851, determined either to build the road themselves or else let the work out in small sections. Mason's estimates, therefore, were made with this end in view.

The preliminary engineering estimates were submitted by the first of September, but the final estimates were not submitted until much later, and it was impossible to start active construction work on the main line that fall. However, in accordance with the letter of the charter, the Illinois Central, on December 23, 1851, broke ground at both Cairo and Chicago, and amidst elaborate ceremonies, the salutes of cannon, and the ringing of bells, formally commenced the con-

¹Report of President Schuyler to directors, Sept. 2, 1851, in *Documents relating to the Organization of the Illinois Central Railroad*, 55-56; also sec. 15, paragraph 3, of the charter.

²Illinois Central Railroad, *Charter*, sec. 15, paragraph 3; *ibid.*, sec. 23.

³Practically no railroad material was made in this country and it had to be imported from Europe.

⁴*Chicago Daily Democrat*, April 22, 23, 1851.

struction of this great enterprise.¹ During the winter supplies were contracted for, the Federal land survey was completed, arrangements made for transfer of the land to the company, and other preliminary work completed.

Specifications had been prepared during the winter, and on March 15, 1852, bids were asked for the construction of divisions 1, 2, 6, 8, 9, and 10. The proposals were to include grading, masonry, bridging, and superstructure for the entire division or a part of the same, or merely for a single item, if desired.² Bids could be entered with or without material. The terms were one-half cash and one-half 7 per cent bonds at par, with the usual arrangement in regard to inspection, completion within a specified period, etc. At the time the contracts were placed, the credit of the road was strong, and there was a ready response on the part of contractors, both in Illinois and the eastern States. Men even came from Europe, and there were several bidders for every section of the line. The bids were low and the terms favorable to the company. This permitted the railroad to let the work out to responsible bidders at reasonable figures and the work was committed to first-class, experienced contractors. In many cases the division contractors sublet part of the work. On the whole, the relations between the company and the contractors were amicable.

Contracts for the first six divisions were let early in June 1852, and bids for the third, fourth, fifth, seventh, eleventh, and twelfth divisions were let on June 14. Work was commenced at once on the third, fourth, fifth, and seventh divisions, but the eleventh and twelfth were not pushed until two years later. The bids included only the grading and part of the bridges, the company itself laying the rails and erecting most of the buildings. Thus, by the end of October 1852 the entire road, with the exception of 52 miles north of the Big Muddy River, where the contractors had thrown up their work, was under contract, and active construction had been started.³

The affairs of the Illinois Central at Chicago were not proceeding as smoothly as in the southern and central parts of the State. Railroad matters in that city had been in a demoralized condition for many months prior to the passage of the charter, and the company was forced to take a hand in local railroad controversies and also in municipal politics in order to secure adequate terminal facilities and a city franchise. The conflict between the Lake Shore and the Michigan Southern (then the Southern Michigan) and the Michigan Central was the one which involved the Illinois Central in the greatest

¹*Cairo Sun*, Dec. 25, 1851.

²*Chicago Daily Democrat*, April 23, 1851; March 25, 1852. To facilitate the work of construction, the road was divided into 12 divisions, varying in length from 50 to 75 miles, according to the character and extent of the grading and bridging. Over each division was placed a division engineer, whose duty it was to supervise the individual contracts and direct the construction done directly by the company.

³*American Railroad Journal*, XXIX, 683, Oct. 25, 1856.

difficulties. For several years these two railroads had been keen rivals in Michigan and northern Indiana, and during the year 1850 they had extended their tracks to within a few miles of Chicago. Each endeavored to secure an independent entrance to the city and to prevent its competitor from obtaining a similar right. The result was a fight in the legislatures of Illinois, Michigan, and Indiana, in the common council of Chicago, in municipal politics of that city, and even between groups of workmen along the tracks.¹ The companies were of equal strength and neither could secure a charter from the State of Illinois or a franchise from the city. Despite all their efforts, in 1851 the two railroads were halted at the Illinois State line.

The charter for the Illinois Central was before the legislature at this time and the Michigan Central allied itself with the promoters of this road, hoping thereby to secure the coveted entrance into Chicago. The influence of the Michigan company was brought to bear upon the legislature and it is probable that financial assistance was extended to the promoters of the new company. The charter was eventually passed and the Illinois Central was allowed to make connections with other railroads.² At the time, it was commonly understood that this provision applied to the Michigan Central.

Very soon after the "Central" was organized, rumors began to arise that the two companies were to form some kind of a connection by which the Michigan corporation would enter Chicago over the tracks of the Illinois Central. Congressman Wentworth, in the *Chicago Daily Democrat* of April 22, gave credence to this report in the following statement:

"The Michigan Central has offered to build a road for the Illinois Central from Chicago to the Indiana State line and take the bonds of the company in payment, and have the bonds draw interest only from the completion of the road. The offer was before the Illinois Central board in New York on Tuesday last. . . . The proposition is to have that road in running order by the first of next October."

And again, only a couple of days before the arrival of Mr. Mason, the following notice appeared in the *Democrat*:

"The contract of the Michigan Central with the Illinois Central Company is to build the railroad from Chicago to the Kankakee River in one year . . . and to the State line by October 1 next. . . ."

Additional strength was given these rumors by the action of the Michigan Central's subsidiary corporation, the Albany and Salem, commencing surveys from Chicago to the State line. However, these rumors were groundless, and nothing more was heard until the Illinois Central itself commenced surveys southwest of the city towards the Indiana State line and the Kankakee River.

¹Cf. *Chicago Daily Democrat* during the latter half of the year 1850. Mr. Wentworth, editor of the *Democrat*, took an active part in the controversy.

²Illinois Central Railroad, *Charter*, sec. 11.

While these preliminary surveys were being completed the company was making special efforts to secure an ordinance admitting it to the city of Chicago.

After a careful consideration of the various routes, the company asked for an entrance along the lake front. The railroad was to be built northeast from Lake Calumet, now Kensington, to the southern limits of the city at what is now Fifty-third Street, but was then outside the city boundaries. From Hyde Park to Park Row, Twelfth Street, the company was to have permission to place its tracks along the lake shore and could purchase what land it needed from private owners of real estate. From Park Row to the Chicago River the railroad was to receive from the city a right-of-way of 500 to 600 feet just east of Michigan Avenue. In return for this grant the company agreed to provide permanent protection, in the form of levees and piling, against the encroachments of Lake Michigan. This protection was to extend from Hyde Park to the Chicago River.¹ At the time the petition of the company was presented the city had provided practically no protection against the lake and most of the territory north of the city limits and east of the present Illinois Central tracks was submerged land.

Sixty years ago Michigan Avenue was the exclusive residence street of Chicago, and the proposition to run a steam-railroad along the avenue provoked strenuous opposition from the property-owners, who believed it would destroy the value of their investments. On the other hand, the north and west wards had, for years, paid heavy taxes to protect the lake shore from encroachments of Lake Michigan and that portion of Chicago gladly supported the Illinois Central plan. They argued that the city was poor and the assumption of the expensive south-side levees by the railroad would more than compensate for any depreciation in the value of residence property in the neighborhood.² Mass-meetings and parades were held by each side; circulars and petitions were widely circulated; the newspapers took an active interest in the matter; and both sides threatened to resort to legal proceedings. The contest was carried to the city council, and occupied the attention of its members the entire month of December. But the Illinois Central interests gained the upper hand and secured the passage of the ordinance by a vote of 10 to 6.³ The main features of the franchise were those embodied in the petition of the company, with some minor exceptions, including a reduction of the right-of-way from Twelfth Street to the river to 300 feet. The restrictions upon the company were also made more severe.

The decision of the city council did not settle the dispute. Walter Gurnee was mayor at the time and on account of a number of minor

¹*Chicago Daily Democrat*, Dec. 3, 1851.

²*Ibid.*, daily notices during the month of December 1851.

³*Ibid.*, Dec. 30, 1851.

objections to the ordinance as passed, and also on account of his general opposition to the policy of the measure, he vetoed the franchise. The council passed the ordinance over his veto. The document was immediately forwarded to the directors of the company in New York for their approval, but the day on which the papers left the city the whole matter was reconsidered by the council. The two opposing parties compromised their differences and a new franchise, agreeable to the south-side wards, was passed. It was signed by Mayor Gurnee and forwarded to New York three days after the first ordinance.

The original franchise had been duly received in New York and the directors of the company, well satisfied with the provisions, accepted it. Three days later, much to their astonishment, there appeared the second ordinance. Although similar in most respects to the petition of the company, there were some new restrictions upon the company which the directors did not approve, and consequently the board declined to accept it, preferring to wait for more favorable legislation.

Supposing the first measure had definitely settled the questions under dispute in regard to an entrance into Chicago, the president of the company immediately directed the engineers to commence construction work from Chicago to the State line. When the second ordinance was not accepted, the company, of course, had no legal right to enter the city, but rather than delay matters it was determined to complete the railroad from Lake Calumet to the city limits at once. There was practically no danger of not obtaining a proper entrance to the city, and the construction of this section would provide the Michigan Central with its much-desired entrance into Chicago without protracted delay. Much of the ground south of the city limits, especially near Lake Calumet and Woodlawn, was low and marshy, and this made it necessary to place the tracks on trestle-work at considerable additional expense. Rails and ties had been ordered in the fall of 1851, and by January 1852 the first shipments had arrived. Grading and other preliminary work were commenced in December, and the combined energies of the Michigan Central and Illinois Central were exerted to finish the line from the Indiana border to Lake Calumet and from there to Hyde Park.¹

Construction was continued when possible during the winter, and as soon as the weather permitted both companies placed large gangs of men at work. By the first of May the railroad was within 8 miles of the city limits and three weeks later that short stretch was completed. On the 21st of the month the first train, hauling gravel and construction materials, left Calumet and ran to the city limits. Temporary freight and passenger stations had been established just outside the limits, and on the morning of May 20 this first completed section of the Illinois Central was formally opened and a passenger

¹Ackerman, *Historical Sketch of the Illinois Central Railroad*, 84.

train was run from Chicago to the State line.¹ Regular freight and passenger trains were placed in service a few days later. The Michigan Central made use of the tracks of the Illinois Central from Calumet to Chicago, and this piece of roadbed became the final link by which the former company established a through line from Chicago to the East.²

The tracks to the south from the city limits were not completed without conflicts with the Michigan Southern Company. This company opposed the construction of the road and endeavored to prevent the Illinois Central from crossing its tracks. It demanded that the latter company put in an overhead crossing at what is now Grand Crossing. The difficulty could not be settled and each company refused to allow the other to put in any crossing at all. Finally the Illinois Central became tired of this delay and sent a large gang of laborers to build the crossing under cover of night. The Michigan Southern was taken by surprise, its watchmen were overpowered, and the grade crossing was finished before morning. The Michigan company was forced to accept the situation and the last obstacle to the completion of this section was removed.³

This steady construction work, carried on regardless of the warring factions in the Chicago city council, exerted a strong influence upon that body. This influence was increased by vague rumors of a cut-off from Joliet to Calumet which would divert a considerable traffic from Chicago proper. No attempt was made to press the franchise question until April 20, only a month before the railroad reached the city limits. Local objections still continued, but the pressure of the Illinois Central and Michigan Central overcame this opposition, and on June 14, 1852, the common council approved the ordinance originally passed on December 29. The railroad was admitted to the city via the lake-front route and was granted a 300-foot right-of-way from Hyde Park to the Chicago River. In return for this grant, the railroad assumed the responsibility of protecting the lake shore along its right-of-way and agreed not to put up any permanent buildings from Park Row to Randolph Street. Certain other obligations and restrictions were imposed upon the company, but in the main the franchise was greatly to the advantage of the railroad.⁴

With subsequent purchases of land between Park Row and the river, partly from private owners and partly from the Federal Government, the Illinois Central secured probably the finest terminal prop-

¹*Chicago Daily Democrat*, May 23, 1852; Ackerman, *Historical Sketch of the Illinois Central Railroad*, 85.

²*Ibid*; also advertisements of train service in Chicago newspapers from June 1852, on.

³*Chicago Daily Democratic Press*, April 30, 1853. The matter of Grand Crossing was a sore point between the two roads for several years. Within a few weeks after the crossing was put in a bad accident occurred in which several lives were lost and the two companies accused each other of having been to blame for not putting in an overhead crossing.

⁴*Chicago Daily Democrat*, May 3, 1852; *ibid.*, May 15, 1852; Ackerman, *Historical Sketch of the Illinois Central Railroad*, 8.

erty possessed by any single railroad in the world. Its depots and shops were situated in the heart of the city and its right-of-way between Grand Crossing and the river was not traversed by any other railroad, and for most of the distance not even by a highway. For the railroad the right-of-way along the lake front was of inestimable value. In insuring protection of the many miles of shore-line from the river to Hyde Park the railroad assumed a responsibility that was both troublesome and expensive, and at the same time the city was relieved of expenditures amounting to tens of thousands of dollars a year, not an inconsiderable item for the Chicago of 1850. Moreover, this easy and uninterrupted entrance to the very heart of the business district aided the development of the city.

The legal difficulties having been removed, the work of construction proceeded with great rapidity. Rails, ties, and piles were already on hand, and within a few weeks after the passage of the franchise admitting the railroad to the city the track was extended to Twelfth Street. Temporary freight and passenger stations were built there and used until the permanent structures were finished. Much of the right-of-way was under water and heavy expenditures were necessary to put the tracks in a safe condition. The rails were laid on trestle-work for nearly the entire distance from Hyde Park to Randolph street and beyond the right-of-way a temporary breakwater of piling was erected. The pile and trestle work was to be filled in at a later time, when the company's finances would justify the outlay.¹

The company also purchased large quantities of land in the heart of the city near Randolph Street and expended something like \$250,000 in purchasing urban property, in addition to \$500,000 more expended on the lake-shore protection, virtually purchase-money for the generous right-of-way granted by the city.² At the foot of Randolph Street, on land purchased from the Federal Government, the company in 1853 commenced the erection of its Chicago passenger station, the total cost of which was over \$250,000. At the time it was the most expensive railroad station in the country. The building was used jointly by the Illinois Central, the Michigan Central, and the Chicago, Burlington and Quincy Railroads, and the top floor of the station was used as a general office. North of the passenger station the company erected a large in-and-out freight-house, also the largest freight-station of its kind in the country at that time, and the largest brick or stone building in the city. At Fourteenth street, near the present Park Row passenger station, were placed the terminal shops, roundhouses, and cleaning yards. In 1856 the Fourteenth Street works of the American Car Company of Chicago were purchased, and after that date most

¹Ackerman, *Historical Sketch of the Illinois Central Railroad*, 80-85; Illinois Central Railroad, *Annual Report*, 1855. The breakwater—trestle work—was not filled in until after the Chicago fire of 1871.

²Illinois Central Railroad, *Annual Reports*, 1855 to 1860; *Chicago Daily Democrat*, Jan. 1, 1852, 1853, 1854, 1855, 1856, 1857, 1858, 1859, 1860.

of the heavy engine and car repairs on the system were made at these shops. A number of locomotives and cars were built also by the company at the Fourteenth Street works. By 1855, nearly \$1,000,000 had been expended by the company for construction, right-of-way, lake-shore protection, buildings, and other terminal improvements in the city limits. The work was continued during the following five years, during which time an additional \$1,000,000 was spent on the Chicago terminals.

Moreover, on June 23, 1852, the company secured an amendment to its charter permitting it to build a railroad from Twelfth Street to the South Branch of the Chicago River.¹ This road, known as the St. Charles Air Line, served as an inner belt railroad for the Illinois Central, Michigan Central, Lake Shore, Chicago, Burlington and Quincy, Galena and Chicago Union, Chicago and Rock Island, and Chicago and North Western Railroads. It was built by the Illinois Central and was completed in 1856 at a total cost of \$50,000.²

While these large expenditures were being made at Chicago, work on other portions of the system was not being neglected. According to the Federal act of 1850, the company was given a right-of-way 200 feet wide through Government land and the charter turned over to the promoters the old State right-of-way. Most of the territory through which the road ran was unoccupied land.³ Thus the company had little difficulty in securing what right-of-way and station ground were needed; nor was there much trouble in obtaining village and town franchises. The Illinois Central created a majority of the villages and towns along its tracks and it held the grounds before there was any municipal organization. The only opposition was at Galena. The railroad, under both the State and the Holbrook projects, terminated at that city, and its citizens were bitterly opposed to the extension of the line to Dunleith, realizing that the construction of the Central to that point meant the practical decay of Galena. Since the extension of the road was an essential part of the act of Congress conferring the land-grant and of the State charter, there was no possibility of changing the provision. The city, however, placed numerous obstacles in the way, and for several months refused to give the company a franchise; however, the railroad finally received the right-of-way to enter Galena, but only with many conditions and restrictions.

The matter of local franchises did not interfere with the commencement of construction work, and contracts for the entire road were let in the spring and early summer of 1852. Unlike most railroads of the time, the Illinois Central was not handicapped by

¹Illinois, *Laws*, 1852, pp. 130, 208.

²Illinois Central Railroad, *Annual Reports*, 1855, 1856, 1857. The Illinois Central subsequently sold three-fourths of its interest in the St. Charles Air Line to the Michigan Central, Chicago, Burlington and Quincy, and Chicago and North Western.

³*Cf.* Charter and Federal act of Sept. 20, 1850; Ackerman, *Early Illinois Railroads*, 34.

financial difficulties. The sale of the \$4,000,000 loan of February 1852, and the \$5,000,000 sterling loan of June, the same year, together with subscriptions by the stockholders, provided ample funds for starting the work. Part of the later loans, especially the free land issue of 1855-56, were placed at a considerable discount, but the money-market fluctuations which brought this condition to pass did not seriously interfere with the loans. Moreover, the capital stock of over \$14,000,000 was issued subject to assessment, and the directors thus at all times had, either in hand or in sight, whatever funds were necessary to carry on the enterprise in the most economical and expeditious manner. Economy and good management were always observed, but the directorate was also in a position to push the work as much as possible. Materials and labor were paid for in cash or bonds equivalent to cash, and payments were met promptly. With the exception of a few weeks after the assignment of 1857, all bills, contracts, notes, or other obligations were liquidated when due and the credit of the company was always high.¹ This enabled the Illinois Central not only to finish the work within the limits set by the charter, but also to carry on the enterprise at a comparatively low cost.²

Despite this strength, the management in Illinois was occasionally involved in financial difficulties, especially in relation to contracts for material and labor. The road was let to contractors in the spring and summer of 1852 and at that time Illinois Central 7 per cent bonds were selling at a slight premium. Accordingly, the directors stipulated that the terms for all work be one-half cash and one-half 7 per cent bonds at par.³ This arrangement was accepted and the first payments were made on such a basis. The contracts were also based on the prices prevailing in 1852, and on account of the competition between bidders they were taken at low figures. During 1853 and 1854 the price of bonds, materials, and labor remained approximately the same as in 1852, but various influences combined to depress the quotations of Illinois Central bonds, while the general prosperity increased the cost of railroad supplies and labor throughout the entire country. This was especially the case in Illinois on account of the large amount of railroad construction and the abundant crops, which made enormous demands for unskilled labor. Naturally, the contractors were unwilling to stand the decline in bonds and increased cost of construction, and asked for additional compensation from the company. Where definite contracts had been made the management refused to make any radical changes. Most of the contractors, however, had taken up the work in such a way that the company could not force

¹The assignment did not affect the credit of the Illinois Central to any great extent. The greater part of the construction work was finished in 1855; the floating debts that could not be met were only indirectly related to contracts for construction.

²The company was forced at times to pursue a hand-to-mouth financial policy; at the same time, there were always sufficient funds in the treasury to meet the contracts when due.

³*Chicago Daily Democrat*, Mar. 25, 1852; also advertisement.

them to continue at the old terms, or else did not feel it desirable to do so. Under the circumstances, the provision making half payment in bonds was not carried out, and the payment to the contractors was largely increased. In spite of this reasonable action by the railroad, many contractors surrendered their contracts and threw the unfinished work back upon the company.¹

Aside from these difficulties, the management had little to contend with beyond the general engineering problems involved in such an extensive enterprise. The prairies of Illinois offered an almost ideal location for a railroad, and except for somewhat difficult construction on three or four divisions, the building of the road proceeded without serious delays. Even in the bluffs along the Illinois and Cache Rivers the engineering problem was extremely simple as compared with the building of many other lines. The greatest trouble was found in the distance of the work from the older parts of the country, together with the high cost of transportation. The labor problem was solved by the employment of foreign laborers, largely Irish. In fact, the road was built almost entirely by this class of workmen. At one time nearly 10,000 men were working on the road, but the need of help on the farms and demand by other railroads prevented the Central from keeping all the men it needed. The transportation of materials also caused much expense and trouble. Rails, bridge-iron, equipment, and other railroad materials were carried from England and the eastern States to Cairo, Chicago, and Dunleith by water. From those places they were either hauled by wagon across the country or else carried on the rivers, the canal, and the Galena and Chicago Union Railway as near the construction work as possible and then hauled by wagon. This method, at best, was slow and expensive, and considerable delay was caused. Supplies for the men were hauled long distances by teams, as most of the country through which the road went was sparsely settled.

In spite of these obstacles the work progressed rapidly. According to the charter, as has been noted, the main line was to be completed within 4 years and the branches within 6 years, or by September 1855 and 1857, respectively,² but the acts of June 23, 1852, and February 12, 1853,³ extended the time of completion of the Galena branch 4 years and provided that the construction of 50 miles of track between La Salle and Bloomington by June 15, 1853, would satisfy the requirements of the charter.⁴ The provision of the charter and

¹*Cairo Business Mirror and City Directory*, 1864-65; letter of W. H. Osborn, New York, Oct. 16, 1855, quoted in *Railway Times*, Nov. 10, 1855; official communication from the board of directors, Nov. 7, 1854, quoted in *Railway Times*, Nov. 25, 1854; "Satterthwaits' Report," in *Railway Times*, July 22, 1854. The greatest difficulty was experienced in the division north of Cairo and near Decatur.

²Illinois Central Railroad, *Charter*, par. 3, sec. 16.

³Illinois, *Laws*, June 23, 1852, p. 130; Feb. 12, 1853, sec. 1.

⁴*Ibid.* The charter provided that the company should deposit \$200,000 as a guarantee of good faith and that this sum should be forfeited unless the prescribed portion was finished within the specified time limits.

amendments setting a time within which the road had to be finished and the large investment in the property forced the directors to complete the railroad as soon as possible. The company was incorporated on February 10, 1852, and legally organized March 19, following. On May 22 of the next year the portion from Chicago to Kensington was finished and contracts let for the remainder of the road. Other sections were completed in rapid succession, until, by January 1, 1855, all the main line and over half of the Galena and Chicago branches were in operation. During the next 6 months the remainder of the Galena branch and the Chicago branch as far south as Mattoon were finished, leaving only the line from the St. Louis and Terre Haute Railroad to Centralia, 77 miles, incomplete. The financial difficulties of 1855, lack of labor, and the fact that the company already had a connection with the main line by way of the Great Western from Tolono to Decatur and the Terre Haute Road from Mattoon to Pana, made it inadvisable to finish the work before September 1856.¹ The last rail was laid on September 26, 1856, and the entire system was thus completed.

Although formally opened in September 1856, in a sense the railroad was only partially completed. Many of the station buildings were not built, fencing, ballasting, construction of levees, and piling at Chicago, Cairo, La Salle, and Dunleith were incomplete, and much of the bridge and culvert work was of a temporary nature. The equipment was also inadequate. Hence the expenditures during the fall of 1856 and all of 1857 were very large. However, by the close of the latter year everything was finished in fact and further construction work was confined to extensions and the demands of increasing traffic.²

The total cost of construction was \$26,568,017.61, or \$37,600 per mile, of which some \$21,000,000 was expended on roadway, buildings, etc.³

WISCONSIN.

Railroads in the three States north and west of Chicago, as has been already shown, grew up around the Chicago roads. In Wisconsin, although Milwaukee served to some extent as a subsidiary center, the direct influence of Chicago was especially marked. Wisconsin developed a keen interest in canals and invested largely in plank roads, especially in the vicinity of Milwaukee—an interesting attempt by that city to develop the country round about.⁴ About 1839 and later, plans and routes were being made for a great central waterway from Lake Winnebago to the Mississippi, via the Fox and Wisconsin

¹*American Railroad Journal*, XXIX, 682-683, Oct. 25, 1856.

²*Illinois Central Railroad, Annual Reports*, 1855, 1856, 1857.

³The rails were of exceptionally good material, and, according to Ackerman, some of them were in use as late as 1881. *Early Illinois Railroads*, 42.

⁴*DeBow's Commercial Review*, XVII, 537, Nov. 1854.

and Rock Rivers, and a canal from Milwaukee to the Rock at Janesville. The latter was the first to be actually put under construction, in 1840.¹ It was then proposed to reach the Wisconsin by the Yahara and the Four Lakes, building a canal from the head of Mendota or Fourth Lake to the Wisconsin, 25 miles distant.

These proposed improvements had little practical success, and railroads were early urged in competition for public favor. In 1842 it was proposed to turn over the funds granted for the Rock River Canal to a railroad from Milwaukee to Galena via Madison and Janesville.² Part of the route was surveyed, but little practical work was done until nearly 1850, when the road to Madison was put under construction, and 20 miles completed by 1850.³ About the same time a new movement for plank roads arose, doubtless caused in part by the failure to obtain capital for railroads. An extensive system was planned, the roads to be run from Milwaukee to Waukesha, of which 10 miles were built; to Janesville via Mukwonago, and a branch to Rochester, 38 miles in all; from Milwaukee to Watertown, 45 miles, actually built; to Lisbon and Hartland, 25 miles built; to Fond du Lac, 12 miles actually built; to Green Bay 10 miles, and to Humboldt and Wauwatosa 5 miles each, a total of 150 miles. The stock in general paid heavy dividends. All were chartered, as their names indicated, to run much farther into the country, but their routes were later occupied by railroads instead.

One of the first motives for railroad building was to tap the lead district in the southwestern part of the State and bring the lead to Milwaukee for shipment via the lakes, instead of down the Mississippi through Galena. This diversion of trade would be supplemented by the rich agricultural product of the region. The investment necessary was not thought to be over \$1,000,000 or \$1,200,000.⁴ In 1848 a number of roads were suggested for which Federal aid was hoped. One was to run from the St. Croix to Lake Superior and another from the Mississippi to Green Bay.⁵

In 1854 the Milwaukee and Mississippi reached Madison, and the Lake Shore from Chicago reached Milwaukee. Seven roads, all of them radiating from Milwaukee, were chartered or begun in that year.⁶ The total mileage projected was 901 miles, of which 346 were to be opened by the end of 1854. The roads then under construction or promotion were the Green Bay, Milwaukee and Chicago (Lake Shore), the Milwaukee and Beloit, the Milwaukee and Watertown, the Milwaukee and La Crosse, the Milwaukee, Fond du Lac and Green Bay, and the Milwaukee and Mississippi. Two years later, in 1856, there were 11 roads, with a total mileage in operation

¹*Niles' Register*, LVII, 20, Sept. 7, 1839.

²*Ibid.*, LXI, 296, Jan. 8, 1842.

³*Hunt's Merchants' Magazine*, XXV, 121, July 1851.

⁴*Ibid.*, X, 550, June 1844.

⁵*Niles' Register*, LXXV, 123, Feb. 21, 1849.

⁶*DeBow's Commercial Review*, XVII, 536-537, Nov. 1854.

of 432, and 263 miles then under construction. The new roads were the Racine and Beloit, the Beloit and Madison, the Wisconsin Central, and the Southern Wisconsin. Other extensions were planned, from La Crosse and Fond du Lac to Lake Superior, and into the copper country from Green Bay. Minnesota was also rapidly growing, and this stimulated the Milwaukee roads to reach out into that territory.¹

TRANS-MISSISSIPPI ROADS.

Across the Mississippi, comparatively few railroads were completed within this period, though not a few were begun, especially in Iowa and Missouri. The opening of the Chicago and Rock Island Railroad, in 1854, and the construction of the bridge across the Mississippi at Rock Island, in 1855, paved the way for the extension of the iron rails to the Missouri. Indeed, the charter for the Mississippi and Missouri Railroad had been secured in 1853, as an extension of the Rock Island Railroad from Davenport to Council Bluffs. By 1860² the road had reached Grinnell, and several other roads had been constructed towards the west, among them the Iowa Central, the Chicago, Iowa and Nebraska, and the Burlington and Missouri River Railroad. In Missouri, the oldest of the States in the upper valley, railroads were discussed at the same period as in other States. In 1836 the mail between Louisville, St. Louis, and New Orleans amounted to over a ton by packet, and this was taken as a sign that railroads would soon be a necessity to carry the mails with sufficient speed and safety.³ In 1837 the Missouri legislature chartered a road from St. Louis to the Ozarks, to develop the iron mines, but funds were not forthcoming.

In 1839 a short road was chartered from St. Louis to Ste. Genevieve, but that, too, failed to obtain public confidence and both compromised on a plank road.⁴ In 1843 the Iron Mountain Road was revived, but as the State refused to back such a scheme, its promoters associated it with a canal project, seemingly equally unsuccessful.⁵ The roads from Cincinnati and Indianapolis met with popular approval, but did not reach the popular pocket. A dream of a Pacific railroad met with better success, as St. Louis County, in 1850, voted to subscribe \$100,000 to its stock.⁶

In 1851 a number of charters were obtained for roads in the main badly located.⁷ By 1852 two roads, one from St. Louis southwesterly and one from Hannibal to St. Joseph, a continuation of the Burling-

¹*Hunt's Merchants' Magazine*, XXXIV, 618, May, 1856.

²Chicago and Rock Island Railroad Company, *Annual Report of the President and Directors to the Stockholders*, 1860, p. 7.

³*Niles' Register*, L, 129, April 23, 1836.

⁴*Ibid.*, LI, 352, Jan. 28, 1837; LV, 48, Sept. 15, 1838; *DeBow's Commercial Review*, XI, 283, Sept. 1851.

⁵*Hunt's Merchants' Magazine*, VIII, 542, June 1843.

⁶*DeBow's Commercial Review*, IX, 554, Nov. 1850.

⁷*Ibid.*, XI, 283, Sept. 1851.

ton, from Chicago, were under construction. The Missouri Central, from St. Louis to Kansas City, and the Iron Mountain Road were in a promising condition.¹ In 1853 the legislature passed an act appropriating \$8,250,000 for building five railroads in the State, a total of 1,091 miles. The State agreed to issue its bonds to keep pace with sums actually paid and expended by private or corporate subscriptions, and in the case of each road to take a mortgage on the entire road to secure its loan. The first bonds were to be issued after \$50,000 had been expended, and in like amounts thereafter. The roads benefiting were the Atlantic and Pacific, which was to run southwest to the Kansas line, 311 miles, and to receive \$1,000,000; the road to Kansas City, 280 miles long, which was to receive \$3,000,000; the Hannibal and St. Joseph, 200 miles long, which was to receive \$1,500,000; the Northern Missouri, 228 miles, which was to receive \$2,000,000; and the Iron Mountain, 75 miles long, which was to receive \$750,000.²

Another act of the same year (1853) was a general law providing for the incorporation of railroad companies by any six or more persons. The gage for all roads in the State was fixed at 5 feet 6 inches. County courts and city councils were empowered to subscribe to any railroad, and to pay their installments by an issue of bonds or by special taxation. Any county or city levying a railroad tax must issue receipts to the taxpayers, which were assignable and convertible into stock of the company to which the subscription was made.³ Under the law the city and county of St. Louis subscribed \$2,400,000 to four railroads, viz, to the Atlantic and Pacific, \$500,000 from the city, \$200,000 from the county; to the Ohio and Mississippi, \$500,000 from the city and \$200,000 from the county; and the county alone subscribed \$500,000 each to the Northern Missouri and the Iron Mountain Roads.⁴

By 1856 the Ohio and Mississippi, whose 5½-foot gage seems to have controlled the Missouri roads, was connecting St. Louis and Vincennes, with a good prospect of reaching Cincinnati in a short time by a direct route.⁵ The road west of St. Louis, uniting the roads at first called the Atlantic and Pacific and the Missouri Central, had reached Jefferson City, and the branches to Kansas City and to the Southwest were being constructed. The Iron Mountain Road is spoken of as in rapid progress, as also roads to Des Moines and ultimately St. Paul, and to Keokuk, at the rapids of the Mississippi. Across the State the road from Hannibal to St. Joseph was nearing the latter city.⁶

¹*De Bow's Commercial Review*, XII, 326, March 1852.

²*Hunt's Merchants' Magazine*, XXVIII, 640, May 1853; XXIV, 637-638, May 1851.

³*Ibid.*, 759, June 1853.

⁴*DeBow's Commercial Review*, XV, 213, Sept. 1853.

⁵*Ibid.*, XXI, 87, July 1856.

⁶*Ibid.*, 86, July 1856.

CHAPTER XVII.

REVIEW AND SUMMARY.¹

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THE NEW CONCEPT OF TRANSPORTATION.

The growth and economic development of railways and other means of transportation have been traced from the crude trails of the earliest settlers through the later roads, turnpikes, canals, and finally to the railroad. The gradual change of the latter has been shown from local to national, from isolated unit to continental link, from a slightly improved suburban road system to a series of great traffic highways. Understood by but few in the early days, the concept of transportation itself changed, with the widening realization of national growth and power, to meet demands hitherto unknown in the world's history. It is a period of many experiments and countless mistakes, of pioneers who failed, but upon whose failures were built the great successes of those who came after.

At the beginning the common idea of a railroad was that of a short local road serving a city, or at least operated for some distinctly local purpose. The roads were often so built as to prevent transfer from one to another. But the necessities of traffic soon demonstrated the desirability of the "long haul," both to the roads and to the shippers. In the "war of the gages," standardization won out, as the continental nature of the business became apparent. From the mutual exclusiveness fostered by cities, in their efforts to exclude, by means of different gages, competing roads from tributary territory, the roads passed to the stage of mutual interdependence, characterized eventually by pools and other traffic agreements. This stage is marked at the end of the first period by the beginning of through connections, even though through trains were not generally operated.

At the beginning of 1840 there were 2,818 miles of railroad in the United States, consisting almost entirely of lines radiating from cities on the Atlantic Coast.² There were a few isolated western lines. Boston, New York, Philadelphia, Baltimore, and Charleston were all looking eagerly to lines tapping the western country, the first even so far as St. Louis. Portland had a dream of reaching the trade of Canada and the Great Lakes. The financial depression of 1837 to 1842, however, seems to have made westward-looking schemes

¹A part of this chapter is compiled from Cleveland and Powell, *Railroad Promotion and Capitalization*, 156 *et seq.*

²Williams, *New York Annual Register for 1840*, p. 209.

more the property of visionaries and promoters than of such of the public as had money to invest. Only in New England was there even a fairly steady supply of capital, and that on the whole chiefly for local roads. On the other hand, in 1837, when New England capital could have been had to finance Illinois roads, sectional jealousy prevented. Similarly, English capital was held objectionable in several instances.¹ With so extraordinary an addition to the ordinary risk of capital in a new enterprise, New England investors were even more guarded in putting money into projects not easily watched.

In 1840, Henry S. Tanner published a book of 273 pages, entitled *A Description of the Canals and Railroads of the United States, Comprehending Notices of all the Works of Internal Improvements throughout the United States*. He attempted to classify and systematize the varying routes and means of transportation, both actual and projected. He enumerated 9 great systems, 7 of which connected the seaboard cities with the West. The first, or "main artery," was a line from Portsmouth, New Hampshire, to Pensacola, Florida, 1,600 miles long. He counted 21 different roads as part of it. The second was the route from Boston to Buffalo, 530 miles long, with 10 separate roads; the third from New York to Lake Erie, via the Erie Railroad, 450 miles long; the fourth from Philadelphia to Lake Erie, via the projected State railroad through Sunbury, 420 miles long; the fifth, from Philadelphia to Pittsburgh, 394 miles, was a combination of canal and railroad; the sixth was from Baltimore to Wheeling, 280 miles; the seventh from Richmond, Virginia, by railroad and canal to the Kanawha River; the eighth from Charleston to Cincinnati, 718 miles; and the ninth from Savannah, via the Central of Georgia to Macon, and thence by the Alabama roads to Pensacola. The author supplements his classification by a similar structure in the West, where only 4 or 5 scattered roads existed, and by a wonderful map, on which many roads both east and west were located that were not built for 10 years and more thereafter.

McMaster says:²

"Actual construction of highways of transportation connecting the East and West was one of the results of the rush of population from the seaboard to the Mississippi Valley. The threatened loss of the western trade down the Mississippi River on account of the enormous expense of transportation over the mountains or around by the Mohawk River and the Lakes led to the projection of the Erie Canal. Upon its completion the people of Philadelphia were in their turn alarmed, since goods could be transported around by way of New York and the Erie Canal to Pittsburgh at one-third of the cost required to transport them over the mountains. The canal route and the 'portage railroad' were projected in 1826. This resulted in stirring up the people of Baltimore, who feared, in their turn, the loss of their trade to New York and Philadelphia. Accordingly, the Baltimore and Ohio Railroad was organized in 1827, and in the next year, on July 4, its construction was begun."

¹Cf. previous chapters, *passim*.

²McMaster, *A Brief History of the United States*, 281.

A craze for internal improvements now set in, especially in the Middle, Southern, and Western States, which reached its culmination about 1837 and which was followed by a severe and disastrous reaction. At the beginning of the next decade these States found themselves saddled with enormous debts, the interest charges on which in some cases they were unable to meet, and with extravagant systems of unfinished public works. There had been, moreover, outside of New England, banking of the worst type, so that credit, both public and private, was frequently disorganized.

Of significance in the decade 1840 to 1850 is the development of public opinion as regards the relative values of railroads and canals. The early opinion that railroads could not compete with waterways gave ground before practical proofs to the contrary in Massachusetts and Connecticut and in the Hudson Valley. The necessary closing of canals through the winter, the dangers of damage by low water and by flood incident to canal transportation, and the slow rate of movement, disqualified canals in many lines of traffic in competition with the rapidly improving railway construction and management.

Still, experience varied. The Albany-Buffalo roads, handicapped by the necessity of paying tolls, carried only one-fifth the tonnage of the Erie Canal during the decade 1839 to 1849, and in this period the net revenues of the canals doubled. On the other hand, in 1849 the State of Rhode Island revoked the charter of the Blackstone Canal because it was useless after the construction of the Providence and Worcester Road. The greatest growth of roads in this decade was seen in New England, where canals were generally impracticable.

During the decade the railroads were largely built from the proceeds of the sale of stock. Bonds were in rather bad repute in consequence of the experience of a few years before. Toward the close of the decade, however, there appeared a tendency in the direction of bond issues. The New Hampshire law was changed in 1850 so as to admit of bond issues by railroad corporations, the previous law not allowing this privilege nor that of issuing new stock below par. The New York and Erie about 1850 was able to float a 7 per cent loan of several millions at about 90, and this was considered a great achievement. This was possible, perhaps, because the State relieved this road from the necessity of repaying a \$3,000,000 loan. The Pennsylvania Road was built entirely out of the proceeds of stock subscriptions, which were canvassed even in single shares in Philadelphia.¹

The decade 1840-1850 was peculiarly the era of local, especially municipal, aid to railways built by private corporations. The custom of granting State loans was more characteristic of the previous decade, while the system of land-grants by the Federal and State Governments

¹See Ringwalt, *Development of Transportation Systems in the United States*, 125; also Pennsylvania Railroad Company, *Annual Report*, 1847, for reference to Massachusetts roads.

is characteristic of the two following decades. The New York and Erie and other corporations in New York, the Western in Massachusetts, and the Baltimore and Ohio in Maryland received large loans from their respective States, which were not in every case repaid; but this policy does not extend much beyond the first few years of the decade. There are few examples of State aid in Massachusetts after 1841, as appears from an examination of Appendix B of the *Massachusetts Report of Railroad Corporations for 1848*.

CONSTRUCTION.

The cost and character of construction varied greatly in the different sections. Construction was best and the cost highest in general in the New England States. In the Middle States construction was not so substantial and the cost in general was accordingly less. In the Southern States construction was still less substantial, and in the Western States it was generally very unsubstantial. Favorable physical conditions in the South and West, however, tended to lower the cost of construction. In some cases the old wooden sill with the strap-iron surface was still in use at the end of the decade. Not uncommonly, ties were laid on stone sills, and the construction of the road-bed and grade was often defective. There was a steady betterment of these conditions, however, toward the end of the decade.

RATES AND FARES.

In considering statistics of fares and freight rates during the decade, one is impressed with the great decrease in freight rates since that time and with the comparatively small decrease in passenger fares. There was, however, in the earlier period, great variety from section to section in the rates and fares charged. These charges were generally highest in the South, where the volume of traffic was least. It was thought possible to carry passengers for less than 1 cent per mile,¹ while it was not supposed that freight could be profitably moved for less than 1.5 cents per ton per mile,² but experience has shown that neither of these suppositions was correct.

Another surprising thing is the development of different classes in passenger traffic. The *New York State Engineer and Surveyor's Report for 1850* gives the following passenger rates on several of the New York roads:

"Albany and Schenectady 3 cents and 2.4 cents for first and second classes, respectively; 2.81 cents and 1.55 cents, respectively, on the Attica and Buffalo Railroad; 4.25 cents, 2 cents, 1.50 cents for three classes on the Auburn and Rochester Railroad; summer 1.33 cents and 1.75 cents and winter 2 cents and 2.50 cents on the Hudson River Railroad."

Where there was but one class, the fares ranged from 2 cents to 3 cents per mile. The Syracuse and Utica Railroad charged 2.83 cents,

¹New York State Engineer and Surveyor. *Annual Report*, 1851, p. 17.

²Ringwalt, *Development of Transportation Systems in the United States*, 124; see also *American Railroad Journal*, XXIII, 273, May 4, 1850.

1.886 cents, and 1.336 cents per mile for the first, second, and third classes, respectively.

Ringwalt¹ quotes Henry C. Carey in respect to a list published in 1848 embracing "every railroad in the union north of Baltimore and east of Ohio, except Camden and Amboy lines," in which the fares vary from 1.72 cents to 3.89 cents per mile, the average being 2.85 cents per mile. Another quotation cited by Ringwalt shows an average of 3.55 cents for way passengers, 1.75 cents for through passengers, and an average of 2.65 cents per mile. Another citation in reference to freight rates gives 8.97 cents per ton per mile for "first-class" freight, and 6.16 cents per ton per mile for "second-class" freight, the average being 7.56 cents per ton per mile. The report of the State engineer and surveyor of New York (1851), referred to above, states that the cost of moving freight traffic over the Utica and Schenectady Railroad was about 1.8 cents per ton per mile. Of course the charge or rate would be considerably above this, especially as the railroad was compelled to pay canal charges of 1 cent per mile.

RAILWAY ACCIDENTS DURING THE DECADE 1840-1850.

In 1848 Massachusetts, with 1,043 miles of railroad, reported 56 persons killed and 65 injured; and many of the corporations had not reported.² In 1850 the Hudson River Railroad reported 16 killed and 3 injured in 9 months. The New York and Erie reported 13 killed and 4 injured for the same period. In all New York for the same period, 62 persons had been killed and 13 injured.³

The editor of the *American Railroad Journal*, in 1850,⁴ in reviewing an accident on the Western Railroad caused by a broken axle, and the report of the coroner's jury, severely criticizes the report and affirms that there is no excuse for such frequent accidents, since the railroad corporations could prevent them by the use of good material. The reports giving the causes of accidents show that people were careless about getting in the way of moving trains. The number of fatalities as compared with the number of mere injuries is notable.

SUMMARY FOR THE DECADE 1840-1850.

Ringwalt summarizes the most prominent features of transportation development at the end of the fifth decade as follows:⁵

"(1) Water routes, including the Atlantic and the Gulf, continued to furnish the principal freight avenues of the country, and the magnitude of the business transacted on the Mississippi and its tributaries, and the lakes, had greatly increased during the previous 10 years.

"(2) Railways were beginning to institute serious rivalry with a few of the water routes, such as the carriage of coal in the Schuylkill region, flour over

¹Ringwalt, *Development of Transportation Systems in the United States*, 131.

²Massachusetts Railroad Corporations, *Annual Report*, 1848, p. viii.

³New York State Engineer and Surveyor, *Annual Report*, 1850, pp. 66, 67.

⁴*American Railroad Journal*, XXIII, 609, Sept. 28, 1850.

⁵Ringwalt, *Development of Transportation Systems in the United States*, 123.

the New York Central in competition with the Erie Canal; and merchandise requiring quick transit, especially during the winter months on routes adjacent to water lines.

“(3) The power of railroads to compete with traffic on navigable streams was as yet undecided.

“(4) The apparent arenas of railway usefulness, independent of short, local lines, were intimately interwoven with the pre-existing water systems of transportation.

“(5) In some cases rivalries between the new rail and the old water systems sprang up; in others, the new rail and the old water systems were cordial allies. The question of highest economic importance was how cheaply freight movements could be made by rail.

“(6) Transition toward a bonded indebtedness may be noted toward the end of the decade.”

CHARTERS.

To obtain a charter during the early period of railway promotion it was necessary only to petition the legislature, setting forth the purpose of the proposed improvement, the public advantage to accrue, and the powers to be exercised. Favorable action by the legislature constituted a formal contract between the State and the parties in interest, joined by offer and acceptance. On account of the opportunity for bribery and fraud which this system afforded, it later became the common practice for the States by general enactment to prescribe the conditions which must be complied with before a certificate of incorporation would be granted. Where these provisions were complied with, the certificate was issued as a matter of form, and the powers and privileges conferred by the general act began to operate in the same manner as if given by a special act. With a few exceptions in the West, each State began with special or private acts of incorporation, and afterwards adopted general laws, though the change came about very slowly. It was at first avoided by a system of abridgment. When enacted in this manner a charter contained a few necessary local provisions, with a clause including all the privileges granted to some other specified corporation. The natural outcome of such a system and of the popular outcry against the corruption associated with special privilege was greater uniformity, and eventually general acts embodying the essential and common provisions of the older special charters. In some cases the first general laws contained only a brief outline of powers and privileges, leaving the chief features to be supplied by special enactment. In many States also the granting of special charters was continued after general laws of incorporation had been enacted, until the practice was stopped, in many cases by an amendment to or a clause in the State Constitution.

While the States borrowed charter provisions from one another, and thus brought about a certain semblance of uniformity, selections were piecemeal, and the provisions copied were often those of minor

importance, or were unfitted to the needs of the borrowing State. Few States profited greatly from the experience of others, and in general the history of acts of incorporation in the different States has been essentially similar.

"Each State, except a few in the west, had its crops of railway charters, and as the promoters moved westward from the Atlantic towards the Pacific, the charters were generally more loosely constructed through the omission of the more detailed, explicit, and often restrictive sections."¹

In New York, until 1848, every charter was a special grant. In that year the general law required by the Constitution of 1846 was passed. This was superseded by the general law of 1850. This put an end to all organization under special charters, except for municipal corporations, or in certain peculiar cases.

Under the system of special charters legislative corruption flourished. In 1857 a Texas governor regretted that a precedent had not been set at first of granting all similar powers and privileges, for then there would be no inducement for besetting the legislature with applications for special favors.² The principal cause removed, general laws have tended to do away with the evil of political favoritism and legislative corruption in obtaining charters. The privileges obtainable under general laws were definite and applicable to all cases, but amendments could be had when the demand was great enough; and the liberal charters of the day of special acts did not generally prove the menace they might have been, because in many cases failure to fulfill the terms caused forfeiture, and in other cases bankruptcy gave the States opportunity to dictate new terms for reorganization. Under the old charters, as a means of utilizing the names of reputable citizens in raising funds locally, a number of commissioners were named whose duty it was to receive subscriptions to capital stock. This was done away with by the general law, which required subscriptions before incorporation. In a report upon railway legislation in the United States, it is said:

"The greatest change brought about by the transition from special charters to incorporation under general laws consisted in uniformity. Almost infinite variety in charter provisions was common during the early period of special legislation. Under general laws, even when compliance therewith was not enforced or enforceable, a certain degree of uniformity was brought about from the very first."⁴

Some description of the varied provisions and ideas of early charters has been given in connection with the different roads. It will be sufficient to recall that railways were regarded merely as improved

¹Meyer, "Railway Charters," in American Economic Association, *Publications*, 3d series, I, No. 1, 232-233.

²Message of Governor Pease, in Texas, *Senate Journal*, 1857, pp. 30-31.

³Meyer, *Railway Regulation under Foreign and Domestic Laws*, in *Report of Industrial Commission*, IX, 920.

highways, with all the paraphernalia of toll houses and gates.¹ It was a distinct advance when the charter of the Maine, New Hampshire and Massachusetts Railroad gave the corporation the privilege of buying cars and locomotives for the purpose of transporting passengers and freight.

As often happens, however, many legal phrases persisted long after the ideas which they expressed had ceased to be held. The wording of early charters does not, in many cases, adequately represent the state of public opinion of the time. Often the legislators preferred to copy English acts rather than work out methods adapted to American conditions. The charter of the Liverpool and Manchester contained a clause providing for a reduction in rates when the dividends should exceed a normal yield upon the investment, and this provision was included in many of the early American charters. Parliament also reserved in this charter the right to purchase the property upon specified terms after the expiration of a certain period, and similar provisions found their way into early charters in America. Yet American experience had brought out needs for legislation which the English models were thought to supply. Although it was not allowed, the claim made in the Warren and Charles River bridge case,² for an exclusive right of franchise under a general long-term grant of toll, made the States cautious about all charters, so that it was thought reasonable to limit income to 10 per cent by reserving the right to reduce rates when that figure should be exceeded. The reservation of the right to purchase by the State, moreover, afforded an easy and convenient method of escape from final decision in the question of relative advantage of public and private ownership of railroads. But the Dartmouth College case, which gave to corporate charters the standing of inviolable contracts,³ was alone responsible for a third limitation found in most American railroad charters, reserving to the legislature the right to amend and repeal at pleasure.

When a turnpike company earned more tolls than it could distribute in the form of dividends, it still remained open to all who would pay for its use, but a railroad not only supplied a thoroughfare, but transportation as well; and when profits became unduly large it was obviously to the advantage of the directors to discourage measures which would tend to create traffic and increase receipts. The Boston and Providence, the Boston and Worcester, and the Western (of Massachusetts) Railroads earned sufficient to declare dividends up to the legal limit of 10 per cent, a restriction which proved disastrous by causing obstruction to progress lest charges might increase income and attract hostile legislation. Two of the roads, after 30 years of successful operation and 10 per cent dividends, had large surpluses awaiting

¹Massachusetts, *Laws*, 1830, p. 434, chap. xcv, sec. 6.

²Charles River Bridge *v.* Warren Bridge, 11 Peters, 419.

³Dartmouth College *v.* Woodward, 4 Wheaton, 518.

transfer to stockholders. Stock dividends were forbidden in Massachusetts, and so this easy way to keep down cash dividends was closed. The absence of proper competition made both roads too conservative for good service, and an investigating legislative committee found the roads excellently managed from the investor's point of view, but very poorly from that of the public.

Of great importance to the railroads was the right of expropriation or eminent domain, which enabled the private corporation to lay out a road from point to point as traffic demands suggested, and to condemn private property when the individuals holding it would not sell on suitable terms. The underlying theory of law which permitted the legislature to grant to the railroad corporation the right to exercise powers of eminent domain is that the railroad is a public highway and that the railroad company is a creature of the people to construct and operate it for the public good. On this theory all the States have conferred upon railroad corporations the right of eminent domain. Usually, in condemnation proceedings, it is alleged that an unsuccessful attempt has been made to agree with the owner upon a price, and in some States it is required to state that the lands are necessary for the enterprise.¹ Only a few States have gone so far as to take proper measures to prevent needless duplication of lines of railroad by providing that before the right of eminent domain may be exercised, a State board or commission must be convinced that "public necessity and convenience" demand the construction of the road. In New York, under the act of 1848, it was provided that before a company was entitled to exercise the right of eminent domain it must present evidence that the enterprise promised to be a public utility, and must obtain a special grant of authority from the legislature. The power of eminent domain finally came to be generally regulated by constitutional and statute law.

RAILWAY BANKS.

Mention has been made in previous chapters of the use of monopoly privileges in aid of railroads. There were other methods. In 1833 North Carolina appointed commissioners to raise \$50,000 for the Cape Fear, Yadkin and Pee Dee Railroad by means of a lottery, and to invest the sum in stock in the name of the town of Fayetteville.² In the same year Missouri authorized the trustees of New Franklin to raise by lottery the sum of \$15,000 for the construction of a railroad from their town to the Mississippi River.

Next to the grants of monopoly, perhaps the most frequent form of indirect aid was by means of banking privileges. These were also granted to road and bridge companies before the railroad era, and to many railroads, particularly in the South. Some of these have

¹Baldwin, *American Railroad Law*, 81.

²North Carolina, *Laws*, 1833-34, p. 196.

already been described. Not all of the charters thus granted were finally used. Some were forfeited through failure to comply with the terms; in other cases the law was repealed before the power was exercised. As early as 1814 Maryland chartered the Susquehanna Bank and Bridge Company, with power to employ half its funds in the banking business.¹ In an amendment to the charter of the Delaware and Hudson Canal, granted by New York in 1824, the company was given the right to exercise banking powers during a period of 20 years.² New Jersey, the same year, granted a charter to the "Morris Canal and Banking Company," which gave the banking privileges through a term of 31 years.³ Maine, which in 1823 had authorized a lottery for the benefit of the Cumberland and Oxford Canal, chartered the "Canal Bank" in 1825, with authority to invest one-fourth of its paid subscriptions in the stock of the canal company.⁴ The directors of the Blackstone Canal announced in 1831 that they had received a charter for a bank to be operated for the benefit of the company. Shareholders were privileged to duplicate their holdings of canal stock with shares in the bank, and three-fifths of the funds thus raised by the bank were to be exchanged for stock in the parent company.⁵ The same year the "New Orleans Canal and Banking Company" was chartered by Louisiana to construct a waterway from Lake Pontchartrain to the Mississippi at New Orleans.⁶

When the Western Railroad project was in danger of abandonment in Massachusetts, a proposition was made for the incorporation of a "Western Railroad Bank," to be capitalized at \$5,000,000. The time was thought favorable, for it was in the year (1836) that the charter of the second Bank of the United States expired. Another plan was to establish a State bank, to the capital of which the State should subscribe one-half, and the directors of which should be authorized to subscribe for 10,000 shares of Western Railroad stock. Opposition in the legislature was sufficiently strong to prevent favorable action, and a direct subscription to stock in the railroad was substituted.⁷

Connecticut in 1832 chartered the Quinnebaug Bank at Norwich as an adjunct to the Boston, Norwich and New London Railroad, which later merged with the Worcester and Norwich of Massachusetts to form the Norwich and Worcester. Its charter required that it should not commence operations until \$100,000 should be subscribed to its stock and \$150,000 expended upon the railroad. When these conditions should be fulfilled, it was to take \$100,000 of railroad stock, and

¹Maryland, *Laws*, 1814-15, chap. 66, pp. 52-57.

²New York, *Laws*, 1824, chap. 270, pp. 332-334.

³New Jersey, *Laws*, 1824, pp. 158-171.

⁴Maine, *Special Laws*, 1825, chap. 311, p. 452.

⁵Rhode Island, *Acts and Resolves*, 1831, p. 17.

⁶Louisiana, *Laws*, 1831, No. 18, pp. 38-62.

⁷Bliss, *Historical Memoir of the Western Railroad*, 32.

in case this should prove insufficient, a second subscription to an equal amount was to be made.¹

During the period of wildcat banking in Michigan and Ohio, both States chartered railroad banks. In the legislative session of 1835 Michigan conferred banking powers on four companies.² Stockholders of the River Raisin and Grand River Railroad were incorporated under the title of the "Bank of Tecumseh," with a capital stock of \$100,000, two-thirds that of the railroad. It was to be managed by the directors of the railroad, who were to convey to it the whole of the railroad stock, and to give security for the redemption of notes and debts before banking operations could be commenced. The Macomb and Saginaw Railroad Company was chartered and authorized to establish a bank at Mount Clemens,³ and the Detroit and St. Joseph one at Ypsilanti.⁴ An amendment to the charter of the Erie and Kalamazoo provided for the establishment of the "Erie and Kalamazoo Railroad Bank" at Adrian or Tecumseh.⁵ This bank was actually organized in 1836, and it is probable that without the aid of its notes the railroad could not have been built until a much later period.⁶ In 1837 the bank of the Detroit and Pontiac was established at Pontiac.⁷ The Bank of Macomb County, at Mount Clemens, made no attempt to build the Macomb and Saginaw Railroad, and to preserve its charter it obtained legislative permission in 1840 to build a turnpike instead of a railroad.⁸ It failed in 1858.

The Ohio Railroad charter of 1835 contained a provision "that the funds of said company shall be paid out in orders drawn on the treasurer, in such manner as shall be pointed out by the bylaws of the company; and that all such orders for the payment of money so drawn shall, when presented to the treasurer, be by him paid and redeemed." Without collecting a dollar from the stockholders, and with an empty treasury, the company, under the authority of this clause, began banking operations and successfully maintained a large circulation. Laborers and contractors were paid in notes, and from the proceeds of the bonds of the State, received as a subsidy, some of these notes were redeemed.⁹ When the company suspended no work of permanent character had been done on the road, and there were outstanding several hundred thousand dollars in worthless currency.¹⁰

The first railroad corporation authorized in Texas was the "Texas Railroad, Navigation, and Banking Company," which was chartered

¹Connecticut, *Resolves and Private Laws*, 1789-1836, I, 137.

²Michigan, *Laws*, 1835, p. 5.

³*Ibid.*, 1835, pp. 32-55.

⁴*Ibid.*, 1834, p. 72.

⁵*Ibid.*, 1835, pp. 145-155.

⁶Waggoner, "Pioneer Railroads of Ohio," in *Railroad Gazette*, XXIX, 797-798, Nov. 12, 1897.

⁷Michigan, *Laws of the Territory*, III, 1387.

⁸Michigan, *Laws*, 1840, No. 86, p. 137; *Michigan Pioneer Historical Collections*, II, 111-124; V, 209-222, 471-484.

⁹Ohio, *Special Report of the Auditor*, 1843, p. 20.

¹⁰Leland, "The Ohio Railroad," in *Magazine of Western History*, XIII, 744.

by the first congress of the Republic to connect by railroad and canal the waters of the Sabine and the Rio Grande, but the charter was forfeited. Both Louisiana and Mississippi were liberal in their grants of banking power, not only to railroads, but to industrial corporations as well. Louisiana in 1834 conferred banking powers on the Clinton and Port Hudson Railroad, and provided for a note issue which might reach double the amount of its banking capital. The following year this State authorized the New Orleans and Carrollton Railroad to establish "five offices of discount and deposit" in different towns, and chartered a new corporation, the "Atchafalaya Railroad and Banking Company," with powers to open a bank in the parish of West Feliciana.¹ In 1836 the Pontchartrain Railroad received a grant of banking power. In Mississippi we have this picture of using banks as agencies of railroad financing:

"From December 20, 1831, when banking privileges were conferred on the West Feliciana and Woodville Railroad, until the crash came in 1837, Mississippi was gridironed with imaginary railroads, and beridden with railroad banks. In these enterprises there was more watered stock sold than cross-ties laid; reckless speculation brooked nothing as prosaic as the actual construction of railroads, on the successful operation of which it was supposed fabulous dividends would be declared."²

This State in 1837 chartered the "Benton and Manchester Railroad and Banking Company" and the "Hernando Railroad and Banking Company," and in 1838 it authorized the Paulding and Pontotoc Railroad to deal in exchange and issue notes to one-half the amount of its capital stock, which was \$6,000,000. Other railroad and banking companies were: the Grand Gulf, with a branch at Gallatin, the Aberdeen and Pontotoc, and the Lake Washington and Deer Creek. The charter of the Tombigbee Railroad was amended to authorize the establishment of a bank at Louisville, Winston County, that of the Mississippi and Alabama to provide for a bank at Brandon, and again at Madisonville. The charter of the Mississippi River Railroad was amended to permit a bank at Natchez. The Northern Bank of Mississippi was empowered to construct and maintain a line of railroad from Holly Springs to the Mississippi, and the Commercial Railroad and Banking Company of Vicksburg was similarly authorized to build the Vicksburg and Jackson Railroad.³

Georgia, as has been shown above,⁴ was more successful in her experience with railways, and to a considerable extent with railway banks. The two great railroads, the Georgia Railroad and Banking Company and the Central of Georgia Railroad and Banking Com-

¹Louisiana, *Laws*, 1834, p. 114; 1835, p. 39, 81.

²Brough, *History of Banking in Mississippi*, Mississippi Historical Society, *Publications*, III, 325.

³Mississippi, *Laws*, 1824-1838, pp. 702, 706, 727, 814, 823, 836, 869-881, 887, 893; 1839, chap. 128, p. 275; chap. 158, pp. 361-364.

⁴See chap. xv.

pany, both were in part financed by the auxiliary financial institution. Although, as one southern editor remarked, there was no natural connection between subjects so diverse as railroads and banks, there were in fact, particular reasons why banking privileges should be granted to the company which should construct a road from Savannah to Macon. The withdrawal of the branch of the United States Bank from Savannah left a void in its banking capital which might prove disastrous to business prosperity. It was also impossible to persuade investors to put their money into a railroad alone. The Chattahoochee Railroad was given banking powers in 1836, and the Monroe Railroad had the same privileges. The latter seems the only instance in the State of improvident management, for the road went into bankruptcy in 1845. The Southwestern Railroad Bank, chartered by North Carolina, South Carolina, and Tennessee in 1836 and 1837 to assist in the construction of the Cincinnati and Charleston project, has already been described in detail. The granting of banking privileges is thus seen, with one exception, a Florida charter of 1870, to belong to the very early period of railroad history.

TAX EXEMPTIONS.

Other forms of grants which amounted in fact to public subsidies were various tax exemptions. In some instances absolute immunity was promised, but there was usually a time or percentage limit. Many of these exemptions were in charters of roads highly speculative at the start, and whose construction was either never begun or only completed after a varied history of reorganization. The Vermont Central was declared free from taxes for a period of 10 years after its completion, while the Richmond and Danville was forever exempt. The Hartford and New Haven was exempted until its dividends reached 5 per cent. Partial exemption was also granted. The charter of the Benton and Manchester exempted the stock for one year and then limited the tax to 25 cents a share.¹

CITY RIVALRIES.

Municipal corporations, being creatures of the State, had power to grant subsidies only by State permission. This was freely granted in the early days. The privilege was perhaps the most widely used source of capital outside that of private investment. It was so widely and so indiscriminately used that the credit of such security fell into bad repute, and in the second period of railway building there began to appear regular crops of amendments to State constitutions forbidding the loan of credit to any railroad or similar corporation by any city, township, or county, and in most cases also by the State itself.

¹See also Cleveland and Powell, *Railroad Promotion and Capitalization in the United States*, 177, for examples of exemption.

The city rivalry, which led to this abuse of the power to grant aid by lending the credit of the municipality, has been referred to in previous chapters many times. At first the prizes were local, but the goal rapidly pushed westward, until the leading cities on the coast were all rivals for the Ohio trade. Transportation routes beyond the Alleghenies grew up chiefly with reference to eastern outlets. Boston, New York, and Philadelphia had established themselves in control of their several States by the very outset of the railroad era. This left Baltimore, which had been the rival of Philadelphia for the trade of western New York and Pennsylvania, under the necessity of pushing beyond the Alleghenies. Again Philadelphia took up the contest, and reached one of the two goals on the Ohio—Pittsburgh—first. Only popular support enabled Baltimore to win any sort of success against the power of her nearest city rival, on the one hand, and, on the other, the intrenched antagonism of the vested interests of the Chesapeake and Ohio and Potomac Canal Companies, with their preponderant majority from the Potomac towns in the legislature. Farther down the coast were Charleston and Savannah, each fighting for the trade of the Piedmont and for that of the country between the Appalachians and the Ohio. A little later the Georgia roads entered the territory of Mobile and New Orleans. Mobile, like Baltimore, tried to save herself from extinction by promoting the Mobile and Ohio Railroad. But the great game of city rivalry was that between New York and Philadelphia, with the trade of the continent as its prize.

It is said that in the early days of the nineteenth century New York seemed of little importance, present or future. Its interests were local and its policies controlled by the disputes among a few great land-owning families. Its avenue to the west was partly blocked by the aspirations of Albany, and partly by the supposed advantages of Boston. The present route of the Erie Railroad was looked upon as the natural highway for New York. Here it met the counter efforts of Philadelphia. But the development of the agricultural regions of Central New York and the opening of the Erie Canal gave a new turn to events. Even before the Erie Canal was completed the merchants of Philadelphia found it more profitable to send goods to Albany by water, thence as far as the canal would go, and from that point by wagon to Pittsburgh, thence by wagon across the Alleghenies. The prospect of the successful all-water route to Lake Erie threw Philadelphia business men into a panic and united them in the effort to retain the city's early supremacy. The great public works even pushed through to Pittsburgh a combination of canals and railroads connecting the western city with the Atlantic port and both with Lake Erie. The same legal tactics which had been used to hinder the Baltimore and Ohio were tried, especially by the law of

1852, which provided that all railroads in the State should have a gage uniform with the State system.¹ Upon the wisdom of this provision of the law the Philadelphia *North American* said:

"The section of the law, it will be seen, keeps the New York influence outside of the State lines, and harmonizes the railroads of Pennsylvania into one complete system. It avoids transshipments within the State, and keeps our grasping neighbor within her own bounds; and by binding together the interests of all counties, will foster everywhere a good feeling for Philadelphia. Pennsylvania soil should not be used as a highway leading to and from her rival and competitor—it should be ramified by railroads uniting in Philadelphia—New York has long indulged in the hope and expectation of running across eastern and northern Pennsylvania on the north with the 6-foot gage of track, and on the east with the New Jersey track of 4 feet 10 inches gage, and so, while running through the State, secure its local, interior trade to the loss and injury of Philadelphia. But this cunning game has been effectually checked in the adoption of the gage law above alluded to."²

As often happens, however, in such cases, this piece of legislation injured its makers more than anyone else, and while it was keeping out New York it was also keeping out others, and its northern neighbor went on developing the natural outlet of the State to the lakes and Mississippi Valley, and with it the coveted commercial leadership. The only serious rivalry which was encountered by New York was that of Boston, which had a line to Albany and was aiding in financing railroads to the West while New York was still resting secure in her water routes.

Many smaller rivalries have already been noted. When roads in Illinois were being planned, Galena and Milwaukee were both more prominent than Chicago, and Alton still more prominent. Nashville, Chattanooga, and Knoxville were all rivals for the trade of their sections. Albany, Troy, and Schenectady; Brattleboro, Rutland, and Bennington; Northampton and Amherst; Louisville and Cincinnati were all rivals during the early period.

EARLY RAILWAY AGREEMENTS.

An early effort to draw the roads together for consideration of their problems was the New England Association of Railway Superintendents. The association was formed in Boston, April 5, 1848, primarily because of the "imperfect knowledge in regard to railways and the need of careful investigation and study and collection of well-digested results, all best accomplished by an association of individuals." The various railway companies provided rooms for the association in Boston and monthly meetings were held. At these meetings topics of mutual interest were discussed, such as track sprinkling to promote the comfort of passengers and how to keep the

¹Pennsylvania, *Laws*, 1852, No. 36, pp. 55-36.

²Quoted in *American Railroad Journal*, XXV, 161, March 13, 1852; cf. also *Niles' Register*, LXIX, 96, Oct. 11, 1845.

cars and machinery free from dust, and the riding of unauthorized persons on locomotives, with a resultant loss of revenue and frequent accidents. It may be noted that it was voted to recommend to the roads that this latter practice be forbidden, and that no one be allowed to ride on a locomotive besides the engineman and fireman except the conductor or master mechanic. Cooperative action was also taken in the matter of discharging employees and employing persons discharged by other companies, and the association adopted a form of certificate of discharge, covering the occupation, time on road, and cause of discharge, which came into general use. Rules and regulations as to passengers, baggage, and freight were adopted and signed by all the roads. The *New England Pathfinder Railway Guide* was published under the auspices of the association, and generally sustained by the extra fares paid on trains. Measures were taken concerning lost baggage and a uniform standard of time.¹

As soon as there was more than one line entering any particular field, keen competition arose, and many are the instances of "sharp practice." It will be remembered that several charters were granted, as the Camden and Amboy and the Boston and Lowell, with the express intention of preventing any two roads from building into similar territory. In the winter of 1848-49, one of the roads between New York and Boston reduced its winter rates 40 per cent, to the displeasure of the other roads, which attempted to make an agreement to prevent such an occurrence in the future.²

The situation in New England, however, remained acute. In no other part of the country at the time was there such a network of lines which made competition possible. In 1850 a convention was held at Boston to attempt some sort of adjustment. The Western Road was conspicuous by its absence. Delegates were present from the Boston and Lowell; Nashua and Lowell; Concord; New Hampshire Central; Boston, Concord and Montreal; Concord and Claremont; Contoocook Valley and Northern; Connecticut and Passumpsic; Vermont Central; Vermont and Canada; Ogdensburg; Sullivan; Rutland and Burlington; Cheshire; Fitchburg; Boston and Maine; and Vermont and Massachusetts. The origin was an informal meeting of several persons interested in the lines leading to Vermont, held November 13, 1850. E. Fairbanks was appointed chairman and S. M. Felton, secretary. This group voted to "call a meeting of the directors and superintendents of all railroads constituting the several lines of railway between Boston and Lake Champlain, by way of Concord, New Hampshire, and Fitchburg, Massachusetts, together with the directors and superintendents of such connecting lines as it may seem expedient to the committee to have represented at said

¹New England Association of Railway Superintendents. *Papers and Reports*, 1848-1850.

²Boston and Providence Railroad Company, *Annual Report*, 1849.

meeting, for the purpose of taking means to regulate the competition now existing between portions of said lines, and to consider such other matters as may be brought before them."¹

The report of this convention, held at Boston in December 1850 and January 1851, which was of course purely advisory, touched on many matters of interest as showing the state of affairs then existing. The point of view is very strongly that of the investor. Competition was keeping prices down, rates and fares were being cut not only on the Vermont and New Hampshire roads, but on the Vermont and Massachusetts lines as well. It was desirable to effect some arrangement, for of the millions upon millions of dollars invested in railroads a great portion was useless to the investor, although the public was a gainer. On the Boston and Worcester and the Western Railroads water competition with the packets from Albany to Boston had kept down the rates,² but on these roads it was a matter of over-anxiety to capture business from each other. Said one speaker:

"We make solemn bargains with each other to be governed by certain principles and rules, and violate them the same day, by a secret bargain with an individual, to obtain a small pittance of freight from another road. . . . The people, seeing this, lose all respect for us, as we seem to have none for ourselves; and they approach us to *dicker* with us like jockies, without even thinking that we may deem it an insult. In this way we have already sunk our characters so low, that the term 'railroad man' is one of reproach, and at once jeopardizes his rights and those of his corporation, even in our courts of justice."³

Another, Judge Gove, of the Nashua and Lowell, spoke in a similar vein of the perpetual scramble among the different roads in the country to get business, which had been more like horse-jockeying than the conduct of honorable business men. Men would tamper with railroad agents as they would not with any other men, and try every method to coax prices down. Evidently such efforts met with response, for Judge Gove went on to describe the case of a man living some 10 miles from the Passumpsic Railroad and about 40 miles from any other road, who had his goods teamed and carried to the railroad for nothing. He thought it quite time to stop this business. If such management was not to be prevented, he advised everybody of honorable character to get out of the railroad business as soon as possible.⁴

One of the most interesting discussions was on the practice of running excursion trains in the summer. There were two points of view. Some contended that they added to the profit of the road without detracting from the regular business, while others claimed that many traveled who would otherwise have gone at the regular fares.

¹Convention of the Northern Lines of Railway, *Proceedings*, 1851, p. 5.

²*Ibid.*, 63.

³*Ibid.*, 22.

⁴*Ibid.*, 29.

In the last analysis, the whole source of the competition was the rivalry between New York and Boston for the trade of northern New England, northern New York, and the cities of Montreal and Quebec. The variety of ownership and management made concerted action difficult, and left the northern and weak roads exposed to attacks from the rival city, which diminished their power to pay dividends. If all could have come under one head there would be no question but all would prove good, paying stock. The tendency towards low rates, said the speakers, would end in the ruin of the railroad business, and the winter was a good time to begin to put a stop to it, during the season when water communication was shut off and railroads could obtain some profits.

The rates for varying distances also entered into the problem. The cost of transportation on one road to Waterbury, Vermont, from Boston, was less than to towns between; nor was this an uncommon state of things. Such a condition they felt was not right. The chief difficulties seem to have lain with the roads to White River Junction via Concord, New Hampshire, and Fitchburg, Massachusetts, and between this group of roads, with their natural affiliations with Boston, and the Vermont Central, which connected also with the New York roads. It was pointed out that the latter road really held the key to the situation, and if the traffic were not to go to New York it must be made to the interest of shippers to send their goods to Boston.

There was, however, great difficulty in finding any basis upon which the two sets of roads could agree. A central board or committee was finally appointed, composed of the representatives of the various roads, to consider the whole question of freights between Lake Champlain and Boston, and also to confer with a committee from the Ogdensburg, or Northern of New York, as to rates for freight between that city and Boston. It will be remembered that the Northern Road at this time had no outlet to the south.

An advisory report was adopted as the result of the convention, covering a number of the points in dispute. As to excursion trains, it was resolved that they were advisable, under proper regulations, as a means of increasing the revenue of the different lines of railroads and because these trains tended to promote good feeling among those who resided along the route; but it was agreed that the prices should never be lower than one-half the regular rate, that excursion tickets should be confined to excursion trains, and that excursion trains should never be advertised by railroad companies. Another set of resolutions declared it to be the "policy" of the convention that a rate should not be adopted which was so low as to leave a doubt of its affording some direct profit. The question of determining the actual freight rates was left to the central board, as it had been

impossible to bring about any agreement between the Rutland and Burlington and the Vermont Central.

In 1850 a working agreement was made which was expected to put a stop to the rivalry between the Reading Railroad and the Schuylkill Navigation Company for the Schuylkill coal trade. The railroad charged 30 cents per ton more than the navigation company for the coal delivered at the docks at Richmond, and this was judged to be a fair compensation for the superior advantages of the railroad over the canal.¹

From the sections earlier settled the competitive element in railroading extended to the more westerly roads. In 1853 a convention was held at Buffalo, New York, between representatives of the Michigan Central, the Michigan Southern, the Mad River, the Cleveland and Cincinnati, the New York Central, and the New York and Erie Railroads and the steamboat lines on Lake Erie. The points at issue were the reduction of rates and fares below remunerative charges and the adoption of increased speed on passenger trains without increasing fares in proportion to the extra cost. The convention resulted in the establishment of equal rates of fares and freights between New York and all places on and west of Lake Erie, and a limit to rates of speed through the State of New York. A careful revision of the local passenger and freight tariffs was also made and such increased charges established as were thought necessary to meet the increased cost of labor and materials required for railroad transportation and the increased speed of trains. This amounted to about 20 per cent.²

A very interesting convention of railway men, representing railway interests between the Atlantic seaboard and the Mississippi Valley, met in Cincinnati, September 17, 1856. Its object was to raise rates of freight and passenger business and to devise means of enforcing the resolutions of the convention, as a means of putting a stop to rate-cutting. As a result, fares between New York and a common point in the West were in no case to exceed 2 cents per mile for through tickets, and of this sum the roads between Crestline, Ohio, and New York were to receive \$14.60. This made the rates of fare to the principal cities as follows:³

New York to—		New York to—	
Columbus.....	\$16.35	St. Louis.....	\$27.75
Cincinnati.....	18.50	Terre Haute.....	22.00
Chicago.....	22.00	Indianapolis.....	20.00

These rates were to continue in force from November 1, 1856, to April 1, 1857, or during the period when water competition was sus-

¹Philadelphia and Reading Railroad Company, *Annual Report*, 1850, p. 63.

²New York and Erie Railroad Company, *Annual Report*, 1853, p. 53.

³Appleton's *Railway and Steam Navigation Guide*, 1856, p. 27 et seq.

pending, and after this latter date further adjustment was to be made. One curious provision was that second-class tickets were to be received only upon one train. Freight rates were also adopted, to take effect October 1, and remain in force until the beginning of the winter schedules. These were in effect from New York via the New York Central, Erie, Pennsylvania, and Baltimore and Ohio, as shown in table 79.

TABLE 79.—*Freight rates in effect between New York and western points, November 1, 1856, to April 1, 1857.*

	Rate.			
	First.	Second.	Third.	Fourth.
New York to Cincinnati, all rail, per 100 pounds. . . .	\$1.80	\$1.10	\$0.95	\$0.70
New York to Cincinnati, part rail, part water.	1.30	1.05	.90	.65
New York to Columbus, all rail.	1.35	1.05	.90	.60
New York to Columbus, part rail, part water.	1.25	1.00	.85	.63
New York to Indianapolis, all rail.	1.50	1.20	1.00	.75
New York to Indianapolis, part rail, part water.	1.40	1.10	.95	.70
Cincinnati to New York; flour, \$1.25 per barrel; per 100 pounds. . . . .	.....	.....	.....	.65
Columbus to New York; flour, \$1.10 per barrel; per 100 pounds. . . . .	.....	.....	.....	.58
Indianapolis to New York; flour, \$1.30 per barrel; per 100 pounds. . . . .	.....	.....	.....	.68

In Massachusetts, in 1850, the Fall River and Old Colony Railroads fell out over the traffic from Boston to Bridgewater. The rate was the same on both roads, \$1.17 per ton, but the Fall River captured seven-eighths of the business by means of special contracts with certain companies to carry their freight at 86 cents per ton. It was investigated after the modern manner, but not much seems to have been done about it.

South Carolina inspected the condition of the South Carolina Railroad, especially its freight charges, and the majority reported that "all freight or transportation should be adopted with a view to a fair compensation to the company, and made as permanent as possible; but, under particular circumstances, the direction ought not to lower the freight on cotton at one point without affecting it at another. A minority report, that all discrimination in favor of corporations and large dealers should be discontinued, was laid on the table, although it was urged that such discriminations were unjust, seldom appreciated, and gave no additional value to the stock.¹

¹*Report of Committee of Inspection* (Charleston, 1848), pp. 31-34.

GROWTH OF ROADS.

Railroad building in its first 30 years of existence falls into three periods. The first, to 1843 approximately, covers the six dull years following the panic of 1837. The second is the more cautious period of development of the city systems by linking these into intercity lines with the growth of the through-traffic idea. The third period, from 1853, is the second period of rapid expansion, under the spur of the continental idea and the desire for through routes. Statistics given for these periods are of doubtful value. They are largely colored by hopes and by the prospectuses of promoters, and no two agree.¹ A typical statement is quoted in *Niles' Register* from the *New York Courier and Enquirer* in 1844. Condensed, it is:

The United States had advanced more rapidly, in proportion to its capital and 18,000,000 of inhabitants than all of Europe, in the matter of railroads. 5,000 miles were in use, which paid an average of 5 per cent on the money invested; an equal number more were under construction, and twice as many projected. \$125,000,000 had already been expended upon railroads. New England alone had contributed \$26,000,000 for her 850 miles of railroad. New York had 600 miles completed and 1,000 more in prospect. United, the railroads of New York and New England formed the longest unbroken line in the world, 650 miles from Portland, Maine, to Buffalo, New York, while the longest line under one charter was the Erie, 480 miles long. The line along the Atlantic seaboard was subjected to many interruptions by water. Eventually it would be 900 miles long, with extensions to New Orleans and St. Louis.

The writer also states that during the last few years of rapid progress in railroad building no new canals were planned, and those which existed near railroads had decreased in their receipts from 33 to 66 per cent.² The country was gradually recovering from the depression of the panic years, and railroads were under fairly rapid headway. The East had scarcely been touched, and so, in spite of much local jingoism, was the source of capital for the reviving West. In the South even Virginia awoke to the spirit of trade and began to desire a share of the Mississippi Valley business. Dreams of continental scope appear, and one writer says grandiloquently that, "soon the capital and ports of China will be as near to us as St. Petersburg or London."³ Table 80 shows a fairly typical year in this period, giving the increase in mileage in the different States.

The failure of the English harvest in 1845 and the repeal of the corn laws in January 1846 had a very powerful effect on the growth of transportation in the United States. At a bound the internal trade went up 40 per cent for the year, and gave Boston a decided lead over other ports as a railway shipping-point. In spite of expec-

¹Cf. table in Poor, *Manual of Railroads*, 1868-69, I, 20; *Hunt's Merchants' Magazine*, IV, 481, May 1841.

²*Niles' Register*, LXVII, 22, Sept. 14, 1844.

³*Ibid.*, LXIX, 205, Nov. 29, 1845.

tations to the contrary, 1847 showed an increase of 14 per cent over the preceding year and the ratio of increase kept up. Along with the railroads, canals showed a remarkable rise in receipts, leading a contemporary writer to remark that the roads were not only good properties *per se*, but the source of considerable collateral benefit also, for by drawing out industry and the development of natural resources, they created a far greater amount of property than they represented.

TABLE 80.—*Miles of roads in operation in each State on January 1, 1848, number of miles opened during year, and total number of miles in use, January 1, 1848.*¹

State.	In operation Jan. 1, 1848.	Opened during 1848	Total to Jan. 1, 1849.	State.	In operation Jan. 1, 1848.	Opened during 1848.	Total to Jan. 1, 1849.
	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>		<i>miles.</i>	<i>miles.</i>	<i>miles.</i>
Maine.....	76.75	34.50	111.75	South Carolina.....	204	.....	204
New Hampshire.....	167.25	96.25	264.50	Georgia.....	602	.....	602
Vermont.....	.....	91.50	91.50	Florida.....	26	.....	26
Massachusetts.....	704.75	172	876.75	Alabama.....	92	19	111
Rhode Island.....	64.50	.....	64.50	Mississippi.....	95	.....	95
Connecticut.....	194	76.50	270.50	Louisiana.....	50.50	.....	50.50
New York.....	744	275	1,019	Kentucky.....	28	.....	28
New Jersey.....	202.75	35.125	238.25	Illinois.....	53	.....	53
Pennsylvania.....	720.50	.....	720.50	Indiana.....	86	.....	86
Delaware.....	40	.....	40	Ohio.....	262	32	294
Maryland.....	253	.....	253	Michigan.....	264	.....	264
Virginia.....	406	.....	406				
North Carolina.....	255	.....	255	Total.....	5,589	832.25	6,421.75

¹The figures are given as printed in *Niles' Register*, LXXV, 156, March 7, 1849, although apparently not quite accurate.

In *Hunt's Merchants' Magazine*, XXIII, 91-92, July 1850, comparisons are given of growth of railroad and canal business, 1846 to 1849, inclusive (table 81).

TABLE 81.—*Comparisons of growth of railroad and canal business, 1846 to 1849, inclusive.*

	1846	1847	1848	1849
New York canals.....	\$2,756,106	\$3,635,381	\$3,252,212	\$3,266,226
New York railroads.....	2,315,078	3,166,340	3,724,470	4,289,205
Pennsylvania canals.....	1,196,947	1,295,494	1,587,995	1,633,277
Massachusetts railroads.....	3,940,504	5,210,081	5,651,894	6,118,214
Ohio canal.....	612,302	805,019	785,882	713,173
Georgia, Macon and Western Railroad.....	529,365	531,631	443,583	825,330

Table 82 is designed to show the comparative progress, by decades, of railroads and canals. It will be noticed that from 1830 to 1840 the canal mileage almost tripled, rising from 1,277 to more than 3,300 miles, exceeding the railroad mileage at the latter date by nearly 500 miles, according to Poor's figures, and just equaling it according to the estimate in *Hunt's*. In the next 10 years, however,

the canal mileage showed but a small increase, while the railroads more than doubled. By comparing this condition during the last decade with the figures for receipts shown in table 81, a still more vivid presentation of the ability of the railroad to develop traffic may be obtained. It is said that when the Boston and Worcester was about to be completed one of the directors proposed to farm out the freight business of the road for \$15,000; yet in the first year of the road's operation, while means for transacting freight business were

TABLE 82.—*Mileage of railroads and canals, by decades.*¹

State.	1830		1840			1850		
	Canals.	Railroads.	Canals.	Railroads.		Canals.	Railroads.	
				Hunt.	Poor.		Hunt.	Poor.
	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>	<i>miles.</i>
Maine.....	21	.....	210	10	11	29	257	245
New Hampshire.....	...	...	11	15	53	...	471	467
Vermont.....	...	...	1	...	...	1	366	290
Massachusetts.....	74	²³	89	270	301	89	1,042	1,035
Rhode Island.....	11	...	11	47	50	11	61	68
Connecticut.....	34	...	36	94	102	36	436	402
New York ³	546	...	640	453	374	803	1,409	1,361
Pennsylvania ³	230	²⁷⁰	954	576	754	954	900	1,240
New Jersey.....	20	...	142	192	186	142	332	206
Delaware.....	14	...	14	16	39	14	16	39
Maryland.....	10	...	136	273	213	136	315	259
Virginia ³.....	...	...	216	341	147	216	341	481
North Carolina ³.....	...	...	13	247	53	13	249	283
South Carolina.....	52	...	52	136	137	52	270	289
Georgia.....	16	...	28	212	185	28	666	643
Florida ³.....	...	...	...	52	...	...	52	21
Kentucky.....	2	...	2	32	28	2	80	78
Tennessee.....	...	...	...	...	...	...	48	⁴ 112
Alabama.....	...	...	52	51	46	52	112	183
Mississippi.....	...	...	...	50	...	...	60	75
Ohio.....	245	...	744	39	30	792	590	575
Michigan.....	...	...	...	114	59	...	349	342
Indiana.....	...	...	150	20	...	214	226	228
Illinois.....	...	...	...	26	22	100	118	111
Wisconsin.....	...	...	...	...	...	...	20	20
Iowa.....	...	...	...	...	...	...	...	...
Missouri.....	...	...	...	...	...	...	4	...
Arkansas.....	...	...	...	...	...	...	...	...
Louisiana.....	...	...	14	62	40	14	89	80
Total.....	1,277	73	3,326	3,328	2,818	3,698	8,879	9,021

¹The figures are given as printed in *Hunt's Merchants' Magazine*, XXV, 380-382, Sept. 1851, although apparently not quite accurate. Compared with figures in Poor, *Manual of Railroads*, 1868.

²Not railroads in the modern sense, but of the type of "industrial railroads."

³The table is from the statement of the chief engineer of the Pacific Railroad project of 1851. On the whole, comparing the divergences with accounts in previous chapters, its figures seem to be more accurate than the well-known table of Poor's *Manual*, here inserted for purposes of reference. At times one is suspicious that the figures for 1840 may include the total mileage of roads nearly completed, because they correspond more closely to those of Poor for 1841 or 1842. But see data in *Niles' Register*, LIX, 16, Sept. 5, 1840, LIX, 64, Sept. 26, 1840; which seem to support the larger figures, at least for Virginia.

⁴For 1851.

very imperfect, the receipts from freight were \$54,392. In 1837 they were \$71,264; in 1838, \$82,502; 1839, \$97,751; 1840, \$86,906; 1841, \$105,295; 1842, \$130,600.¹ The earning capacity of the New York railroads seriously reduced in the years when they were not allowed to compete with canals for freight business. When the prohibition was taken off, canal revenues rose for a time, as well as those of the railroads.

COST OF TRANSPORTATION.

In 1839, Charles Ellet, jr., chief engineer on the James River and Kanawha Canal and Railroad, made an estimate of the comparative cost of traffic on the various means of transportation then in use. On canals, irrespective of tolls, cost of transportation was 1½ cents per ton per mile; on railroads 2½ cents; on macadam roads 10 to 15 cents; on common turnpikes, 15 to 20 cents; on steamboats on the lakes, 2 to 4 cents; Ohio and Mississippi River steamers, one-half cent to 1½ cents per ton per mile.² He prophesied that a future average of rates would be three-quarters of a cent per ton per mile. There were two widely divergent opinions on the subject of rates—one of a high rate and such traffic as could pay it, the other of a low rate to develop business. The *American Railroad Journal* appears to have been a consistent advocate of the doctrine of low fares and rates. In 1843, in a review,³ it said that the Boston and Providence had adopted that principle recently. The Paterson Railroad and several southern roads followed. One of the Virginia roads was a notable exception, persisting in its policy of high rates and fares long after all its neighbors had abandoned it. In this year the fare from Washington to Charleston, a combined rail and water route, was \$20, while from Washington to Baltimore, a distance of 40 miles, the fare was \$2.50, over 6 cents per mile. Rates on the rest of the route to New York were equally high; from Baltimore to Philadelphia it was \$4, and from New York to Philadelphia, \$4; for the entire distance of 234 miles of the heaviest traffic in the country, \$10.50. The Camden and Amboy tried to lower it somewhat by a special rate on morning trains, and the Wilmington Road attempted to compete by making similar reductions. The *American Railroad Journal* argued that roads should not merely make low rates where they actually had to, but should practice it in most cases, with great benefit both to themselves and the public.

A little later in the same year, November 19, 1843, a meeting was held at Tuscumbia, Alabama.⁴ Proprietors and agents of the several railroad and stage companies on the mail-route between Memphis and Charleston met to arrange and adopt uniform and reduced through

¹*Hunt's Merchants' Magazine*, XI, 372, Oct. 1844.

²*Ibid.*, V, 284, Sept. 1841.

³Quoted in *Hunt's Merchants' Magazine*, IX, 389, Oct. 1843.

⁴*Hunt's Merchants' Magazine*, IX, 581-582, Dec. 1843.

rates. Two tickets were adopted—one from Memphis to Decatur, \$12, and the other from Decatur to Charleston, \$25. This arrangement resulted in a time of $6\frac{1}{2}$ days from Memphis to Charleston, and a rate of \$37, and in a time of 9 days to New York from Tuscumbia, and a rate of \$62. This included an estimate of \$10 for meals and lodging. There was another possible route from Tuscumbia to New York, that via Nashville, Louisville, and Wheeling, nearly all by stage, the cost of which was \$72.

On April 1, 1844, the Western Railroad of Massachusetts raised its fares to \$6 for through passengers and 3.5 cents per mile for way passengers. To their surprise, while other roads reported increases of passenger business from 25 to 50 per cent, not only did passenger traffic on the Western remain stationary, but freight business actually decreased, although the rates remained unchanged, and the previous three months showed an increase of 52 per cent over the corresponding period of 1843.¹

TABLE 83.—Rates for passage upon Lake Erie and the upper Lakes, September 1, 1848.

PRICES OF PASSAGE ON LAKE ERIE.			
From Buffalo to—	Cabin passage.	Steerage passage.	Oxen and horses.
Erie.....	\$3.00	\$2.00	\$2.50
Conneaut and Ashtabula.....	4.00	2.00	3.50
Fairport and Cleveland.....	4.50	2.50	4.00
Black River, Huron, Sandusky..	5.00	3.00	5.00
Maumee River.....	6.00	3.00	5.00
Monroe and Detroit.....	6.00	3.00	6.00
PRICES OF PASSAGE TO UPPER LAKES.			
Mackinaw.....	\$10.00	\$6.00	\$10.00
Milwaukee, Racine, Southport, Chicago.....	12.00	6.00	10.00

Furniture and luggage to any port on Lake Erie, 50 cents per barrel, bulk; wagons, double \$3, single \$2.50.

Furniture and luggage to Mackinaw, and any port on Lake Michigan, \$1 per barrel, bulk; wagons, double \$5, single \$4.

Foreign emigrants' luggage 60 cents on upper lakes, 30 cents per 100 on Lake Erie.

Prices freight on Lake Erie, to August 21, inclusive, from Buffalo to Detroit and intermediate ports on Lake Erie, heavy 15 cents, light 20 cents.

Prices of freight on upper lakes, to August 31, inclusive, from Buffalo to Chicago and intermediate ports on upper lakes, heavy 20 cents, light 35 cents.

Early in 1848 the steamboat companies on the Great Lakes entered into an arrangement for prices on passengers and freight, with the agreement that freight rates were to be increased after September 1, 1848. Tables 83 and 84 show the schedule of fares and rates adopted.² Additional illustrative rates and fares are given in table 85.

¹*Hunt's Merchants' Magazine*, XI, 184, Aug. 1844.

²*Ibid.*, XVIII, 664, June 1848.

TABLE 84.—Railroad fares and rates.¹

State.	No. of railroads and branches.	Total length.	Average fare per mile.		Way passenger fares per mile, average.	Whole average, first and second class, through and way fares.	Freight rates, average per ton-mile.	
			First class.	Second class.			First class.	Second class.
		<i>miles.</i>	<i>cents.</i>	<i>cents.</i>	<i>cents.</i>	<i>cents.</i>	<i>cents.</i>	<i>cents.</i>
Maine	3	226 $\frac{3}{4}$	2.82	2.50	2.57	2.63	5.68	3.38
New Hampshire..	2	99	3.00	3.00	2.62	2.87 $\frac{1}{2}$	5.25	5.00
Vermont	1	33	3.00	3.00	3.00	3.00	4.00	4.00
Massachusetts...	36	1,929 $\frac{1}{2}$	2.43	1.66	2.71	2.27	5.47	4.54
Rhode Island....	2	91 $\frac{1}{4}$	3.00	2.00	3.16	2.72	6.37	4.39
Connecticut.....	4	253 $\frac{3}{4}$	2.50	1.75	2.20	2.15	5.75	3.50
New York.....	20	798	3.17	1.50	3.75	2.81 $\frac{1}{2}$	9.04	5.79
New Jersey.....	4	155	4.00	3.33	3.54	3.62 $\frac{1}{2}$	13.57	11.66
Pennsylvania....	9	355	3.60	3.26	3.60	3.48 $\frac{1}{2}$	6.75	5.25
Maryland.....	9	661	3.45	3.45	3.58	3.49 $\frac{1}{2}$	4.56	3.12
Virginia.....	6	264 $\frac{1}{2}$	4.74	2.38	4.72	3.94 $\frac{3}{4}$	10.44	4.69
North Carolina..	2	248	4.23	4.23	4.00	4.15 $\frac{1}{2}$	9.83	6.37
South Carolina...	2	204	5.00	5.00	5.00	5.00	10.75	5.50
Georgia.....	5	602	4.14	4.14	4.70	4.32 $\frac{3}{4}$	9.33	4.78
Kentucky.....	1	28	4.46	4.46	4.46	4.46	9.00	9.00
Mississippi.....	1	70	5.35	5.35	6.00	5.56 $\frac{3}{4}$	24.39	17.30
Alabama.....	1	67	4.50	4.50	5.50	4.83 $\frac{1}{2}$	16.83	8.00
Ohio.....	4	307	2.77	2.77	2.66	2.73 $\frac{1}{2}$	6.60	4.62
Indiana.....	1	86	3.00	3.00	3.00	3.00	8.00	5.81
Michigan.....	3	241	3.00	3.00	3.32	3.10 $\frac{2}{3}$	8.44	6.50
Total.....	117	6,720	23.60	23.21	23.70	23.51	28.97	26.16

¹Daggett, *Railroad Guide* for 1848.²Average.TABLE 85.—Notes on freight rates and passenger fares in the United States in 1848.³

Eastern Railroad, Boston to Portland, 105 miles.—Freights on groceries, grain, iron, butter, and dry-goods, \$3.55 through, or 3.4 cents per mile; light and bulky articles \$5 through, or 4.76 cents per ton per mile; fare, \$3 through, or 2.85 cents per mile.

Boston and Maine Railroad, Boston to South Berwick, 72 miles.—Freight, salt, sugar, groceries, iron and coal, \$1.76, or 2.14 cents per ton per mile; light and bulky articles, \$2.88, or 3.5 cents per ton per mile; one horse \$3.62; two horses \$5.43; one-horse carriage, \$2.71; two-horse carriage, \$3.62; four-horse carriage, \$5.43; fare \$1.62 through, or 2.25 cents per mile.

Lowell Railroad, 26 miles.—Merchandise generally, \$1.25 per 2,000 pounds, by cargo through, \$1.10; passenger fare, 56 cents, or 2.15 cents per mile.

Nashua and Lowell Railroad, 15 miles.—Freight generally, \$1 per ton; horses, \$1; one-horse coaches, \$1; passenger fare, 40 cents, or 2.66 cents per mile.

Concord Railroad, Nashua to Concord, 34 miles.—Freight is divided into first and second class, and is charged about 4 cents and 3.5 cents per ton per mile, or \$3 and \$2.50 through to Boston, 75 miles, and lumber, 75 cents per M., and hard wood, \$2.75 per cord; pine wood, \$2.25 through; horses, one, \$3.25; two or more, \$2.50 each; two-horse carriage, \$2.50; fare, 80 cents, or 2.35 cents per mile.

Worcester Railroad, 44 miles.—Coal, iron, lumber, etc., 4 cents; heavy merchandise, such as sugar, salt, butter, etc., about 6 cents; groceries and dry-goods, 6 cents to 8 cents; light and bulky merchandise, 6 cents to 10 cents per ton per mile; passenger fare, \$1.25, or 2.8 cents per mile.

³*American Railroad Journal*, quoted in *Hunt's Merchants' Magazine*, XIX, 333–337, Sept. 1848.

TABLE 85.—Notes on freight rates and passenger fares in the United States in 1848—Continued.

- Boston and Providence Railroad*, 42 miles.—Coal, iron, grain, and merchandise generally from 5 cents to 7.5 cents per ton per mile; horses, \$4; carriages, \$3 to \$4; passenger fare, \$1.25, or 2.97 cents per mile.
- Stonington Railroad*, from Providence to Stonington, 47½ miles.—Corn, grain, iron, coal, sugar, salt, and dry lumber, \$2; butter, dry-goods and bulky articles, \$2.80 per ton; 1 horse, \$3; stage-coach or large carriage, 6.5 cents per mile; fare, \$1.50, or 3.1 cents per mile.
- Boston and New York*, via Providence and Stonington, 216 miles.—Freight, measurement goods, 7 cents per cubic foot; by weight, 30 cents per 100 pounds; passenger fare, \$5, or 2.3 cents per mile.
- Boston to New York*, via Fall River, 223 miles.—Freight, 7 cents per cubic foot, and 30 cents per 100 pounds; passenger fare, \$5, or 2.24 cents per mile.
- Fall River Railroad*, 53 miles.—Coal, iron, and grain, \$2, and sugar, salt, groceries, butter, and dry-goods, \$2.50 per ton; passenger fare, \$1.35, or 2.54 cents per mile; light and bulky articles, charged by measurement, 140 cubic feet to ton.
- Boston and New York*, via Norwich.—Freight as on other through lines; fare through, \$5, and if passenger wishes to stop over a day on the way, he can do so by applying to the agent in New York or Boston.
- Norwich and Worcester Railroad*, 60 miles.—We have not got the rates of freight; fare, \$1.50, or 2.5 cents per mile.
- Old Colony Railroad*, Boston to Plymouth, 37 miles.—Freight generally 4.5 cents per ton per mile; light and bulky articles, 140 cubic feet to ton; passenger fare, \$1, or 2.66 cents per mile.
- Connecticut River Railroad*, from Springfield to Greenfield, 36 miles.—Freight, iron, coal, manure, lumber, grain, sugar, butter, and salt, \$2; dry-goods and groceries, \$2.40 per ton through; fare, \$1.10, or 3 cents per mile.
- Providence and Worcester Railroad*, 43½ miles.—Freight, groceries, dry goods, grain, sugar, salt, butter, iron, coal, manure, and lumber, \$3 for 2,000 pounds; bulky articles, 15 cents per 100 pounds through; fares, first class, \$1.35; second class, 85 cents, or 2.84 cents and 1.9 cents per mile.
- Boston and Fitchburg*, Boston to Fitchburg, 50 miles.—Freight, all heavy articles, as butter, salt, sugar, groceries, and dry-goods, through per ton, \$2, or 4 cents per ton per mile; light and bulky, 4 cents per ton of 150 cubic feet per mile; horses, at 1 ton each, or 4 cents per mile or \$2 each; carriages, one-horse, \$1; two-horse, \$2 each through; fare through, \$1.35, or 2.5 cents per mile.
- Western Railroad*, Worcester to Albany, 156 miles.—Freight, sugar, salt, butter, grain, iron, coal, lumber, and groceries, \$4 per ton of 2,000 pounds, or 2.56 cents per ton per mile; dry-goods and bulky articles, \$7 per ton of 2,000 pounds through, or 4.44 cents per ton per mile; one horse, \$10.50; two horses, \$12.25; 3 horses, \$14, at risk of owners; one-horse carriage through, \$12.23; two-horse carriage, \$15.75 each; stage-coach or omnibus, \$28, at risk of company; fare, through, \$4.25, or 2.72 cents per mile; fare through from Boston to Albany is, we believe, \$5, or 2.5 cents per mile.
- New Haven and Springfield Railroad*, 62 miles.—Coal, iron, and manure, lumber, sugar, salt, etc., \$2.60, or 4.2 cents per ton per mile; groceries and dry-goods, \$3.50; grain, \$5.20 per ton; passenger fare, \$1.87, or 3 cents per mile.
- Bridgeport Railroad*, 98 miles.—Coal, iron, and marble, \$3 per ton; sugar, salt, butter, \$3.20; dry-goods, \$4; grain, 7 cents per bushel, through; horses and cattle, \$3.50 each; two-horse carriage, \$5.25; passenger fare, \$2, or 2.04 cents per mile.
- New York and Harlem Railroad*, 53 miles.—Coal, \$2 per ton; iron, sugar, etc., 18 cents per 100 pounds; heavy merchandise, \$3.50, and light, \$4 per ton; lumber, \$3.50 per M.; horses and cattle, \$3.50 each; passenger fare, \$1, or 1.88 cents per mile.
- New York and Erie Railroad*, New York to Port Jervis, 100 miles; 25 miles by steamboat.—Freight to Otisville, 87 miles, coal, \$2.20; iron, 42; heavy articles, such as grain, sugar, salt, butter, etc., \$3.50 to \$4; groceries, \$4.50; one-horse carriage, \$3; two-horse, \$4.50. We are not able now to give rates charged upon milk, fruits, vegetables, etc., on this line, but they are exceedingly low, and morning and evening trains are run expressly for such freight. We have not obtained rates for current year, since road was opened to Port Jervis.
- Paterson Railroad*, 16½ miles.—Freights average about \$2.50 per ton, delivered by company; fare, 50 cents, or 3 cents per mile.
- Morris and Essex Railroad*, 32½ miles.—Freight, coal, iron, and manure, \$2.25 per ton; corn and grain, 8.5 cents per bushel; lumber, \$3 per 1,000 feet; flour, 25 cents per barrel; fare, \$1, or 3 cents per mile.

TABLE 85.—Notes on freight rates and passenger fares in the United States in 1848—Continued.

- New York to Philadelphia*, via New Brunswick and Trenton, 90 miles.—This line is owned by three distinct companies, and managed by two. The through fare is \$4, or 4.44 cents per mile, while the way fare, or from place to place, is only \$2.25, or 2.5 cents per miles, as follows: From New York to New Brunswick, 31 miles, 75 cents; from thence to South Trenton, 29 miles., 75 cents, and from thence to Philadelphia, 30 miles, 75 cents. This is what the people of those places pay, and what others pay, if they wait over at each place, for next train; but if they pay through, from either end, it is \$4. Yet many have, and more will, probably, hereafter pay three times, or from place to place, and go directly through, by same train, for \$2.25 to \$2.75, while the stranger or uninitiated pays \$4 in same car—or they may do so if they will. This line carries little through freight.
- New York to Philadelphia*, via Camden and Amboy, 88 miles.—This line is owned by one company, and is partly by railroad and partly by steamboats. Fare through is \$3, or 3.4 cents per mile; freight, legal rates, fixed in their charter, 8 cents per ton per mile, or 32 cents per 100 pounds, or \$7.20 per ton, through; company have, however, exacted various prices, from 30 cents to \$1 per 100 pounds, or from \$7 to \$22.40 per ton.
- Reading Railroad*, 92 miles.—Coal, \$1.50 for 2,000 pounds; bituminous coal, iron ore, \$2.10; pig iron and timber, \$2.10; bar iron, flour, grain, fish, and tobacco, \$2.90; groceries and hardware, \$4.25; dry-goods and furniture, \$5.25; one horse, \$6, and carriage per agreement; passenger fare, \$3.50, or 3.8 cents per mile.
- Philadelphia and Columbia Railroad*, 82 miles.—Freighting done by private individuals at about 25 cents per 100 pounds; passenger fare, \$2.88, or 3.5 cents per mile.
- Lancaster and Harrisburg Railroad*, 36 miles.—Passenger fare, \$1.50, or 4.1 cents per mile.
- Harrisburg and Chambersburg Railroad*, 56 miles.—Coal, iron, manure, \$1.50; lumber, corn, grain, \$1.78; sugar, salt, butter, groceries, dry-goods, \$2 per ton through; passenger fare, \$2.12, or 3.78 cents per mile.
- Philadelphia, Wilmington and Baltimore*, 97 miles.—Freight, 50 cents per 100 pounds, through; passengers, \$3, or 3.1 cents per mile. This road carries very little through freight.
- Baltimore and Susquehanna*, 71 miles.—Coal, \$1.375; iron, \$1.84; corn and grain, \$2.20; salt and butter, \$2; groceries, sugar, dry-goods, \$2.50 per ton, through; horses, \$3.75; and four-wheeled carriages, \$3.37 each; passenger fare, \$2.12, or 3 cents per mile.
- Baltimore and Ohio Railroad*, 179 miles.—Coal \$2.75; iron, in open cars, \$3.50; coffee, 25 cents, dry-goods, 35 cents per 100 pounds through; passenger fare, \$7, or 3.91 cents per mile.
- Baltimore and Washington Railroad*, 40 miles.—Coal, iron, and grain, 4 cents per ton per mile; sugar, butter, salt, dry-goods, light and bulky merchandise, \$2.30 per ton through; horse, or horse and wagon, \$5.75; passenger fare, \$1.80, or 4.5 cents per mile.
- Winchester and Potomac*, 32 miles.—Coal, \$1; iron, \$1.75 per ton; flour, 18 cents per barrel; bran, 10½ cents per 100; sugar, dry-goods, and light bulky articles, 14 cents per 100 pounds; horses, \$2.50 each; four-wheeled carriages, \$4.50 to \$7.50; fare, \$2, or 6.25 cents per mile.
- Louisa Railroad*, 50 miles.—Iron, \$1.66; lumber \$3 per M.; corn and grain, 14 cents per 100; sugar, salt, butter, 20 cents; and dry-goods, 22 cents per 100 pounds; horses, \$4.66; four-wheeled carriages, \$4.50 each; light articles \$4 per ton; fare \$2.50, or 5 cents per mile.
- Richmond, Virginia, to Washington City*, 133 miles.—Iron, 2 cents per ton per mile; sugar, salt, butter, groceries, and dry-goods, 0.5 cent per hundredweight per mile; bulky articles 8 cents per cubic foot to Fredericksburg; horses, 6 cents per mile; four-wheeled carriages, 11 cents per mile; passenger fare, \$5.50, or 4.13 cents per mile.
- Richmond and Petersburg Railroad*, 22½ miles.—Sugar, salt, butter, 0.5 per 100 pounds per mile; groceries and dry-goods, 0.75 cent per 100 pounds per mile; passenger fare, \$1, or 4.34 cents per mile.
- Petersburg to Weldon*, 63 miles.—Lumber, \$5 per M.; corn and grain, 6.25 cents to 8.5 cents per bushel, salt, sugar, butter, 25 cents per 100 pounds; horses and carriages, \$3 each through; passenger fare, \$3, or 4.76 cents per mile; second class, \$1.50, or 2.38 cents per mile.
- Gaston and Raleigh*, 87 miles. Lumber, \$7 per M.; corn and grain, 10 cents per bushel; sugar, salt, butter, 35 cents; groceries, 55 cents per 100 pounds; light and bulky articles, 10 cents per cubic foot; horses, \$4.20; carriages, \$7 to \$8.50; passenger fare, \$4, or 4.6 cents per mile.
- Wilmington and Weldon*, 161½ miles.—Corn and grain, 10 cents per bushel for 80 miles, 12 cents through; sugar, salt, butter, 38 cents, and dry-goods, 80 cents per 100 pounds through; horses, \$8; carriages, \$10 through; passenger fares, \$6.50, or 4 cents per mile.

TABLE 85.—Notes on freight rates and passenger fares in the United States in 1848—Continued.

- South Carolina*, 136 miles.—Iron, 25 cents per 100 pounds; corn and grain, 7 cents per bushel; sugar, salt, butter, 25 cents per 100 pounds; light bulky merchandise, 8 cents per cubic foot through; horses, each \$8; four-wheeled carriages, \$10 through, passenger fare, first class, \$6.75, or 4.97 cents per mile.
- Columbia*, 68 miles.—Coal, iron, manure, 25 cents per 100 pounds; corn and grain, 7 cents per bushel; sugar, salt, butter, 25 cents; dry-goods 35 cents per 100 pounds; light bulky merchandise, 8 cents per cubic foot through; horses \$8 each; four-wheeled carriages, \$10; two-wheeled carriages, \$6 through; passenger fare, \$3.38, or 4.97 cents per mile.
- Georgia*, 171 miles.—Iron, 15 cents per 100; corn and grain, 8 cents per bushel; sugar, salt, and butter, 30 cents; dry-goods, 60 cents per 100; light and bulky articles 10 cents per cubic foot through; horses, \$8; four-wheeled carriages, \$10; passenger fare, \$7, or 4.09 cents per mile.
- Western and Atlantic*, 100 miles.—Iron, 15 cents; sugar, salt, butter, 25 cents; dry-goods, 40 cents per 100 pounds; grain, 8 cents per bushel; bulky merchandise, 8 cents per cubic foot through; horses, \$5; two-wheeled carriages, \$3; four-wheeled, \$6; passenger fare, \$5, or 5 cents per mile.
- Central*, 191 miles.—Iron, 30 cents; salt, sugar, butter, 40 cents per 100 pounds; corn 12 cents per bushel; light, bulky articles, 13 cents per cubic foot through; one horse, \$10; four or more, \$5 each; four-wheeled carriage, \$10; passenger fare, \$7, or 3.65 cents per mile.
- Macon and Western*, 101 miles.—Iron, sugar, salt, butter, 25 cents; dry-goods, 44 cents per 100 pounds; grain, 8 cents per bushel; light bulky merchandise, 9 cents per cubic foot through; one horse, \$8; four at \$4 each; four-wheeled carriage, \$8; passenger fare, \$4, or 3.96 cents per mile.
- Montgomery and West Point*, 67 miles.—Barrels whisky, etc., 60 cents; dry barrels, 55 cents; bulky merchandise, 8 cents per cubic foot; cotton, 95 cents per bale of 500 pounds; passenger fare, \$3, or 4.47 cents per mile.
- Vicksburg and Jackson*, 46 miles.—Sugar, coal, iron, and manure, 40 cents per 100 pounds; salt, 60 cents per sack; corn and grain, 10 cents per bushel; dry-goods, 8 cents per cubic foot; cotton, 87.5 cents per bale of 400 pounds; horses and carriages, 12 cents per mile each; passenger fare, \$3, or 6.38 cents per mile.
- West Feliciana Railroad*, 24 miles.—Freight, merchandise, provisions, etc., 50 cents per 100 pounds through; passenger fare, 75 cents, or 3.1 cents per mile.
- Lexington and Ohio*, 28 miles.—Coal, corn, and grain, 5 cents per bushel; iron, sugar, salt, butter, groceries, dry-goods, and light and bulky articles, hemp, bagging, and rope, 12.5 cents per 100 pounds; horses, \$2 each; carriages, \$2 to \$3 each; passenger fare, \$1.25, or 4.46 cents per mile.
- Madison and Indianapolis Railroad*, 86 miles.—Coal and wheat, 9 cents; corn, 8 cents; oats, 7 cents; flour, 35 cents; pork, lard and salt, 50 cents per barrel; iron, \$5 per ton; groceries, dry-goods, and light and bulky articles, 35 cents per 100 pounds; specie, \$1 per 1,000; live hogs, 50 cents through; horses, \$1.50 each or \$1 with a passenger; passenger fare, \$2.50, or 2.9 cents per mile.
- Little Miami*, 84 miles.—Coal, iron, sugar, salt, butter, groceries, and dry-goods, \$3.20 per ton; corn and grain, 7 cents per bushel; light and bulky articles, \$4 per ton through; horses, 4 cents each per mile; carriages the same; passenger fare, \$2, or 2.38 cents per mile.
- Mad River*, 102 miles.—Coal, iron, and manure, \$5 per ton; corn, 11 cents; wheat, 12.25 cents per bushel; flour, 45 cents per barrel; sugar, salt, and butter, 32 cents; and bulky articles, 42 cents per 100 pounds; carriages by weight, and horses by agreement; passenger fares, \$3.50, or 3.18 cents per mile.
- Mansfield and Sandusky*, 56 miles.—Iron, coal, and manure, \$1.60 per ton; corn, 6 cents; wheat, 7 cents per bushel; sugar, salt, butter, \$2; dry-goods, \$2.50, bulky and light articles, \$3 per ton through; horses and carriages, each 4 cents per mile; passenger fares \$1.50, or 2.67 cents per mile.
- Michigan Central*, 146 miles.—Iron, manure, coal, corn, grain, groceries, 39 cents per 100; salt, butter, beef, pork, fish, and sugar, \$1; flour, 66 cents; whisky, beer, cider, \$1.10 per barrel; wheat, 33 cents per 100 through; carriages, 45 cents per 100 pounds; horses, \$2.35; hogs and calves, \$1.64; sheep, \$1.10 each; passenger fares, \$4.40, or 3 cents per mile.
- Southern Michigan Railroad*, 70 miles.—Manure and iron, 24 cents; sugar and butter, 34 cents per 100 pounds; corn and grain, 11 cents per bushel; flour, 40 cents per barrel; salt, 34 cents per barrel through; passenger fares, \$2, or 2.85 cents per mile.

TABLE 85.—Notes on freight rates and passenger fares in the United States in 1848—Continued.

- Albany and Schenectady Railroad*, 17 miles.—Iron, coal, and manure, \$1 per ton; sugar, salt, groceries, butter, dry-goods, and bulky articles, \$1.25 per ton; horses, \$2; carriages, \$1 and \$2 each; passenger fares, 50 cents, or 2.94 cents per mile.
- Troy and Schenectady Railroad*, 20½ miles.—Rates same as on Albany and Schenectady Railroad; passenger fare, 50 cents, or 2.43 cents per mile.
- Utica and Schenectady*, 78 miles.—Prohibited from carrying freight, except when canal is closed, and then canal tolls added to ordinary freight charges; passenger fare, \$3, or 3.84 cents per mile. This line, in connection with other lines from Albany and Buffalo, runs a train at 1.5 cents per mile for emigrants.
- Utica and Syracuse*, 53 miles.—Same as Utica and Schenectady Railroad; passenger fare, \$2, or 3.7 cents per mile.
- Syracuse and Auburn*, 26 miles.—Coal, iron, and manure, 8 cents; sugar, salt, groceries, butter, and dry-goods, 10 cents, and bulky merchandise, 20 cents per 100 pounds; horses, \$1; carriages, \$1 to \$1.50 each; passenger fare, \$1, or 3.84 cents per mile.
- Auburn and Rochester*, 77 miles.—Corn and grain, 27 cents; sugar, salt, butter, groceries, and dry-goods 20 cents; light and bulky articles, 30 cents per 100 pounds; horses, \$3; carriages, \$5 to \$7, according to size; passenger fare, \$3, or 3.89 cents per mile.
- Rochester and Attica*, 44 miles.—Coal, iron, and manure, 0.5 cent per ton; grain, 0.2 cent per bushel; butter, salt, and sugar, 0.4 cent per 100; groceries and dry-goods, 4.5 mills per 100; bulky and light articles, 5 mills, all per mile; horses and carriages, 6.25 cents per mile each; passenger fare, \$1.56, or 3.54 cents per mile.
- Attica and Buffalo*, 31½ miles.—Corn and grain, 3 cents per bushel; butter and sugar, 12 cents per 100 through; passenger fare, 94 cents, or 2.98 cents per mile.
- Buffalo and Niagara Falls*, 22 miles.—Freight, 10 to 12 cents per 100 pounds; passenger fare, 75 cents, or 3.4 cents per mile.
- Lockport and Niagara Falls*, 24 miles.—Passenger fare, 75 cents, or 3.12 cents per mile.

Tables 84 and 85 present an approximate survey of the railway charges toward the end of the second decade of railway operation. The lowest passenger fares (passenger fares were still of far more interest than freight rates) were those on the New York and Erie, 1.7 cents per mile on through tickets, and the next the New York and Harlem, 1.8 cents per mile. The third was the Wilmington and Weldon of North Carolina, just under 2.5 cents per mile. The New England roads were all under 3 cents, except the New Haven, Hartford, and Springfield, just 3 cents. The New England roads were easily the most profitable in the country, a fact attributed in general to their low average rates. On the other hand, the Wilmington and Weldon was considered too low for sound business in the thinly settled country which it served.¹ On other leading roads it will be noticed that the New York and Pennsylvania roads averaged from 2.5 to 3.5 cents, but that the average steadily rose as one went south, with the one notable exception above. The Western roads, although new, averaged under 4 cents, as against the 4 to 5 cents of the South.

Freight rates ran up to 24 cents per ton-mile in Mississippi. The tables as originally published in *Hunt's* are made the point of an argument to show that low rates and high profits were in direct relation, an argument to which experience lent its weight, as a few years later, in 1854, the State engineer of New York, Mr. McAlpin, summarizes average transportation charges per ton per mile as follows, showing a considerable decrease:²

¹*Hunt's Merchants' Magazine*, XVIII, 97, Jan. 1848.²*Ibid.*, XXXI, 123, July, 1854.

From New York to western points, via—	
New York and Erie Railroad.....	\$0.024
Hudson River Railroad.....	.031
New York Central.....	
From Buffalo to Chicago.....	.025
From Boston to Great Lakes, via—	
New England roads, Boston to Rouse's Point.....	.027
Northern Road, Rouse's Point to Ogdensburg.....	.02
Western Road, Boston to Albany.....	.023
From Baltimore, west, by the Baltimore and Ohio.....	.03
From Philadelphia, via the Pennsylvania Railroad (estimated).....	.035

For the sake of comparison, the average rate per ton per mile on certain water routes are also given:

Hudson River.....	\$0.007
Erie Canal.....	.011
Great Lakes—short voyage.....	.01
Great Lakes—long voyage.....	.005
Pennsylvania Canal.....	.024
Ohio River.....	.008
Mississippi River (from New Orleans) lower.....	.006
Mississippi River (from New Orleans) upper.....	.009
Ohio Canal.....	.01
Wabash and Erie Canal.....	.019
Illinois Canal.....	.014
Illinois River.....	.012

The engineer adds that railroads are not rivals but auxiliaries of canals, giving them more freight than they take away, and that, other things being equal, a railroad was the better located for a paying business in the neighborhood of a canal.

About this time the *American Railway Times* published an analysis of the cost of transportation from the production side, as follows:¹

I. Cost of running a passenger train, with 40 passengers, 100 miles:

Locomotive power, at 20 cents per mile.....	\$ 20
One passenger-car (60 seats), at 2 cents per mile.....	2
One baggage-car at 2 cents per mile (too high).....	2
One conductor, \$2 per day; 1 brakeman, \$1 per day.....	3
	<u>27</u>
Receipts on 40 passengers, at 2.5 cents per mile.....	100
Net income.....	<u>73</u>

II. Cost of a train, with 82 passengers, at 1.25 cents per mile (2 more than double the number at half price):

Locomotive power, the same.....	\$ 20
Two passenger-cars (120 seats), at 2 cents per mile.....	4
Other expenses, the same.....	5
	<u>290</u>
Receipts on 82 passengers, at 1.25 cents per mile.....	12.50
Net income.....	<u>73.50</u>

It will be seen that cost of carrying 82 passengers 100 miles is but \$2 more than to carry 40.

III. Cost of a train with 120 passengers:

Same as above, with addition of 1 car at \$2, making.....	\$31
Receipts on 120 passengers, at 1 cent per mile.....	120
Net income, at 1 cent per mile.....	89

It will thus be seen that a train can be run with—

1 passenger and 1 baggage car at a cost of.....	27 cents per mile.
2 passenger and 1 baggage car at a cost of.....	29 cents per mile.
3 passenger and 1 baggage car at a cost of.....	31 cents per mile.
4 passenger and 1 baggage car at a cost of.....	33 cents per mile.

¹Hunt's Merchants' Magazine, XXIX, 120, July 1853.

A large engine, it was estimated, would draw on any road not exceeding a 40-foot grade, 100 tons in addition to the cars, and as 14 passengers with their baggage were allowed to the ton, a full train of 4 cars, 240 passengers, would only equal 17 tons. The difference in the amount of fuel necessary to draw one or three cars was so small as not to be capable of calculation. The profits, therefore, on a train of cars running 100 miles were estimated as follows:

I. One passenger-car, with 40 passengers, at 2.5 cents per mile.....	\$73.00
II. Two passenger-cars, with 82 passengers, at 1.25 cents per mile.....	73.50
III. Three passenger-cars, with 120 passengers, at 1 cent per mile.....	89.00
IV. Four passenger-cars (filled), 240 passengers, at 1 cent per mile.....	207.00

The same rule applied to freight on great thoroughfares, where business was plenty. The Reading Road carried coal 100 miles for \$1 per ton, although the cars had to return empty. The Baltimore and Ohio did the same. In the Reading report for 1852 the cost of hauling coal for a round trip of 190 miles, including cost of the return trip, was given as 38 cents per ton. The trains carried an average load of 368 tons.

RAILWAY SECURITIES.

Gerstner, in 1839, estimated the average interest return on capital invested in the railroads of the United States at 5.5 per cent. As has been noted in previous chapters, the New England railroads, partly because of superior management, partly because of the natural advantages of location in a densely populated section, with prosperous industries, were in general highly profitable. The stock of the Utica and Schenectady never went down to par in the first 7 years of its operation, 1836 to 1843, and paid from 10 to 12 per cent.¹ The Camden and Amboy scarcely paid expenses when it was first opened, but in the years 1834 to 1837 its net earnings exceeded the whole cost of the line.² Railroad stocks remained, however, in general, hazardous investments, subject to numerous fluctuations. The year 1848 was a bad one in railroad stocks, and a list of the New England railroads at that time shows some sharp declines in the selling prices of these highly regarded properties, as shown in table 86.³

Of some of these prices it was said that they were purely nominal, and sales could not have been made without going much lower. Especially noteworthy in this list are the declines in the Boston and Worcester, the Boston and Providence, and the Fitchburg. The Old Colony and the Western also show a radical change. By 1850 the prosperity of the roads gave their stocks an upward turn,⁴ but from 1852 to 1855 there seems to have been a decline, reaching a low point in the latter year.

¹*Hunt's Merchants' Magazine*, IX, 294, Sept. 1843.

²*Ibid.*, XII, 158, Feb. 1845.

³*Niles' Register*, LXXIV, 315, Nov. 15, 1848.

⁴The figures are given as printed in *Hunt's Merchants' Magazine*, XXIII, 529-530, Nov. 1850, although apparently not quite accurate.

TABLE 86.—*Fluctuations in New England railroad stocks in 1848.*

Name.	Nov. 1, 1847.	Nov. 1, 1848.
Boston and Lowell.....	116	108.25
Boston and Worcester.....	121	106.5
Boston and Providence.....	105	86.5
Boston and Maine.....	116	109.5
Cheshire (unfinished).....	92	67
Connecticut River.....	101	97
Concord (10 per cent stock, par \$50).....	63	58
Eastern.....	110.25	102.5
Fall River.....	91	84
Fitchburg.....	125.5	110.25
Northern (New Hampshire).....	102.5	87
Norwich and Worcester.....	40.25	32
Old Colony.....	100.25	83
Portland, Saco and Portsmouth.....	100	196
Vermont and Massachusetts (unfinished)...	76	42
Vermont Central.....	88	50.5
Western.....	113	98.5

¹Asked.TABLE 87.—*Capital, earnings, and selling prices of stocks on certain American roads.¹*

	Capital.	Net earnings.		Prices of stock.	
		1853	1854	1852-53	1855
Baltimore and Ohio.....	\$13,000,000	\$798,000	\$1,472,000	98	56
Boston and Worcester.....	4,500,000	413,000	342,000	105	87.5
Boston and Providence.....	3,160,000	226,000	100,000	99	65.5
Camden and Amboy.....	1,500,000	478,000	552,000	149	128
New York and Erie.....	10,500,000	1,800,000	2,806,000	85	52
Hudson.....	3,740,000	338,000	603,000	76	34.5
New Jersey.....	2,200,000	316,000	440,000	132	124
Philadelphia and Baltimore..	5,000,000	541,000	353,000	36	24
Reading.....	6,600,000	1,251,000	2,140,000	97	91
Michigan Central.....	6,581,000	582,000	879,000	106	97
Michigan Southern.....	3,597,000	586,000	876,000	118	97
Cleveland and Pittsburgh.....	2,000,000	123,000	267,000	93	70
Columbus and Cincinnati....	3,930,000	483,000	611,000	122	101
Cincinnati and Dayton.....	2,100,000	202,000	275,000	102	85
Buffalo and State Line.....	1,100,000	Opened	299,000	130	118
Boston and Maine.....	4,227,000	338,000	420,000	102	94
Eastern, Massachusetts.....	2,850,000	241,000	346,000	91	49
Fitchburg.....	3,540,000	232,000	272,000	94	75
Little Miami.....	2,688,000	314,000	352,000	113	97
Madison and Pennsylvania..	1,650,000	268,000	.....	78	45
Ohio and Pennsylvania.....	2,224,000	.....	662,000	96	82
Pennsylvania Central.....	9,770,000	617,000	1,977,000	93	88
Providence and Worcester...	1,457,000	120,000	140,000	83	79
Terre Haute.....	632,000	71,000	159,000	108	107
	98,486,000	10,338,000	16,343,000	...	...

¹Hunt's Merchants' Magazine, XXXIV, 367, April 1856.

An ingenious argument for State aid in railroad construction is presented in *DeBow's Commercial Review* for October 1856. It consists of a long analysis of the comparative values of State and railroad

bonds, showing how uniformly State bonds sold at higher rates; if the credit of the State were back of the railroad, it would, therefore, be possible to obtain capital more readily. New York, Ohio, and Maryland were the only States at this time whose constitutional provisions prevented them from extending such credit. A bond for \$100 of the State of New York was shown to be worth \$23.50 more than a first-mortgage bond of the New York and Erie Railroad, \$31 more than a second-mortgage bond, and \$36 more than a third-mortgage bond. A first-mortgage bond of the Hudson River Railroad was worth \$27.50 less than the State bond, and a third-mortgage bond \$60 less. A New York Central bond for \$100 was worth \$30 less than a New York State bond for a like amount; a 7 per cent convertible bond of the same road was worth \$25 less. The first-mortgage bond of the New York and Harlem was \$45 under the value of the State security, and of the Buffalo and State line, \$31. Maryland bonds exceeded those of the Baltimore and Ohio Railroad by \$22. The State bonds of Ohio were worth \$29 more than the first-mortgage bonds of the Central Ohio. And so on through a long list of practically all of Middle Western roads, where the need of capital was greatest.¹

CONGRESS AND THE RAILWAYS.²

The most frequent resource of all classes interested in railway promotion was Congress; and here the question was complicated with many others, of both major and minor importance: (1) with the whole great question of internal improvements and their relation to the powers of the Federal Government under the Constitution; (2) that of the propriety or expediency of Government aid to railroads as against improved common roads or canals—and with this the social and economic side of monopoly or “democracy”; and (3) the manner in which such aid was to be given, whether by direct subscription to stock or by outright donation, or by indirect subsidies of various sorts, such as rights-of-way over the public lands, contracts for carrying mail, or aid in connection with the transportation of the mail and with other Government service, such as transportation of troops and munitions of war.

Concerning these efforts toward Government aid two fundamentally differing opinions were entertained. One held that such aid was given purely as an investment of public funds, from which definite returns were to be expected—either, in the simplest cases, directly in dividends on stock or in service rendered, as in carrying the mail, or indirectly, by opening public lands to settlement, by facilitating intercourse in the settled portions, and by increasing the prosperity of the country by

¹*DeBow's Commercial Review*, XXI, 433, Oct. 1856.

²See Haney, *Congressional History of Railways*, listed among the special studies prepared as a basis for these contributions. The Congressional history, like others in the list, is a complete study by itself.

widening the range of markets, both for the farmer and manufacturer, and for the merchant and consumer. The other opinion was that Government aid was to be given outright, because such enterprises were of a public rather than a private nature, and came within the legitimate sphere of Government action. Although the word "socialism" appears to have been invented only in 1832, the idea of the duty of the Government to own and control, if not actually to operate, railways is at least contemporaneous, and sundry expressions of the idea are found much earlier.

In the following pages the discussion of land-grants is omitted. The land-grant policy forms an important division, but is so closely linked to that of governmental action outside the period of this volume that it has seemed best to present the earlier history simply as an introduction to its later and larger aspect.

The entrance of the railway problem into Congress antedates the Interstate Commerce Commission by almost exactly eighty years. It goes back to the report of Benjamin H. Latrobe, afterwards one of the greatest of early railroad engineers, and is included in Gallatin's famous report of 1808 on internal improvements.

"The sort of produce which is carried to our markets is collected from such a diversity of routes, that railroads are out the question as to the carriage of common articles."

He made three exceptions to this general inexpediency: railroads might pay expenses in connection with coal-mines and granite-quarries; they might be used as a temporary expedient in overcoming difficult parts of artificial navigation; and they might make possible long lines of communication otherwise impracticable. Latrobe made no mention of steam as a possible means of locomotion, and while he gave expression to the principle of traffic density, he made no mention of the possibility of developing that density.

Another event was Oliver Evans's "Open Letter to Congress," of 1816. He had been trying to interest various persons in the use of steam since he was a wagon-maker's apprentice in 1772 or 1773, and had patented some of his ideas, one grant by the Maryland legislature being on the ground that it would do no harm. He tried patiently to interest others, but few could understand and none were willing to risk an investment. In 1800 he tried to interest Latrobe, who pronounced his ideas chimerical and absurd, and said Evans was afflicted with "steam mania," conceiving that wagons and boats could be propelled by steam. He made a partially successful experiment with a steam-propelled scow mounted on wheels, in 1804, and a year later published a book on his steam-engine and its application to boats and "carriages on turnpike roads." His letter of 1816, addressed to members of Congress and published in the *National Intelligencer*, seems to have attracted much attention. He put a

special emphasis on the increase in the value of western lands, consequent on better access to market.¹

Although internal improvements continued to be of great interest to Congress, no mention of railroads is officially made from 1809 to 1819, when Mason of Massachusetts presented a petition from Benjamin Dearborn, asking for a trial of his inventions for propelling wheeled carriages by steam, basing his request on the ground that it was well-calculated for the conveyance of mails and any number of passengers, and that it would be perfectly secure from robberies on the highway. The petition was referred to the Committee on Commerce and Manufactures, and no further action was taken.²

In 1823 Commodore Rogers's marine railway attracted attention. It was merely an inclined plane for the purpose of launching ships or hauling them out of the water. President Monroe approved it, and the Committee on Naval Affairs recommended an appropriation of \$50,000 for it, but it was lost in Committee of the Whole House.³ It came up again in the session of 1829-30. Its chief service lay in bringing before Congress the idea of the railway, of an iron-covered "way," upon which heavy objects might be transported with little friction, and of the application of steam to transportation on such a way. The next appearance is January 17, 1825, when the Committee on Roads and Canals was directed to inquire into the expediency of an experiment to be made of railways, under the patent granted in 1824 to John Stevens, of Hoboken. A favorable report resulted, but no action was taken on it.⁴ Stevens had been bringing his ideas before the public since 1812, after the successful experiments of Fulton. It is to be noted that in this report Congress grouped railways with macadam roads, and took a highly paternalistic attitude, seriously considering the construction of a railway "for the benefit of the public."⁵

The year 1825 marks the beginning of direct interest on the part of Congress in railways. Strickland's report of 1826 aroused considerable interest, the House subscribing for 25 copies. In 1828 the South Carolina Railroad applied to the Federal Government for the assistance of Government surveyors. The civil engineer detailed to this duty reported to the company in August 1829, and the report was in turn sent to the Secretary of War for transmission to the President, and by him to Congress. The report was favorable to the region selected, and recommended that the road be made adaptable to horse-power and steam-locomotives, and pointed out the military advantage of the plan.

¹*Niles' Register*, X, 213, May 25, 1816.

²*House Journal*, 1818-19, 15th Cong., 2d sess., 258.

³*Ibid.*, 1822-23, 17th Cong., 2d sess., 171.

⁴*Ibid.*, 1824-25, 18th Cong., 2d sess., 139.

⁵*Ibid.*, 1825-26, 19th Cong., 1st sess., 122. Resolution not agreed to.

A memorial of the Chesapeake and Ohio Canal Company in 1831-32, following Latrobe, said:

"The time, though remote, may, possibly will, arrive in America when mere speed of transportation will warrant the very heavy cost of constructing railways of such graduation, and of so many different tracks, as to admit of various velocities for persons and property, moving at the same time in opposite directions, and of the substitution on each of these tracks of locomotive, or even stationary, steam-engines, for animal labor."¹

In 1830, Carson of North Carolina, speaking on the Buffalo-New Orleans road bill, referred to it as a miserable, paltry earthen road, and states that the committee proposing it had fallen in the rear of the march of science. He refers to the railroad as "that highest effort of the human intellect, in perfecting a system of road intercommunication, which for ease, safety, and expedition challenges the astonishment and admiration of the world."

In the days of the first railways, both in the United States and in England, it was thought that the rates of charges would be made up similarly to those obtaining upon ordinary roads and canals. From the beginning, however, the supporters of railways urged that railway rates would be much lower than rates upon turnpikes. Oliver Evans, in 1804, submitted a statement to the Lancaster Turnpike Company, which was intended to show that one steam-carriage such as he proposed would yield larger net profits than 10 wagons each drawn by 5 horses on an ordinary turnpike.²

In 1812, John Stevens was still more definite. He stated that a great part of our internal commerce was at that time only effected at a cost of 50 per cent of the value of the commodity transported, whereas the railway would make a saving of at least nine-tenths of this charge and reduce the cost to about 5 per cent. Stevens proposed Government ownership, arguing that a 5 per cent toll, in addition to the 5 per cent cost, would yield an enormous revenue, while at the same time it would save the remotely situated farmer some four-fifths of the charges he was then paying. In another place he estimated that 1 ton might be transported 280 miles for 50 cents, which would mean about 0.178 cent per ton per mile. He showed that, even allowing double this amount, the cost would only be one-third the estimated rate for the canals, and hence the State might collect a toll in addition, and still allow relatively low rates. Stevens's estimates were made on the basis of steam locomotion.³

In Strickland's report, an English engineer's estimate is cited, to the effect that the expenses of operating a locomotive would be less than 30 shillings for drawing 50 tons a distance of 60 miles in 10

¹House Ex. Doc. No. 18, 1831-32, 22d Cong., 1st sess., I.

²Niles' Register, III, Addenda, 5, 1813.

³Stevens, *Documents Tending to Prove the Superior Advantages of Railways and Steam Carriages Over Canal Navigation*, 4-5, 17.

hours. This would equal less than half a farthing per ton per mile, or about 0.22 cent. These estimates, it will be observed, are very low, lower probably than the cost could have been at that time, and, as may be seen by reference to preceding pages of this chapter and elsewhere, much lower than rates were actually set. Latrobe took the ground that, with a few exceptions, sufficient traffic could not be developed in this country to warrant the cost of constructing a railway.

In the documents relative to the comparative merits of canals and railroads¹ which were added to the English report on steam navigation, Jonathan Knight, engineer for the Baltimore and Ohio Railroad Company, gave the cost of transportation as not greater than 75 cents per ton per mile,² and stated that on a level road it might be as low as 5 cents per ton per mile. These figures were based on a railway adapted to horse-power. It was stated in a speech in 1836, advocating a railway in place of the National Road, that the Government would only need to charge about 2 cents per mile to keep the former in repair and pay costs of transportation.³ The actual cost of transportation was given, in a document laid before Congress in 1831, as 3.53 cents per ton per mile. It was based on the sum of the following items: Mules and horses, 1.33 cents; hands, 1.33 cents; repairing wagons, 0.66 cent; oil for wagons, 0.2 cent. It was obtained from a road operated by animal power, and would seem to exclude several important charges, such as depreciation and replacement.⁴ It is interesting to note that in a report made to the New York Canal Commissioners, five years later, the cost of transportation on a level railroad was stated to be 3.5 cents, practically the same amount. This report was severely criticized by railway men as being based on a poorly constructed road, which could not be called typical, and it did not make allowance for the saving in time that resulted from the use of steam locomotion. The Pennsylvania Canal Commission, in its annual report for 1831, stated that the cost of transporting coal on the Mauch Chunk Railway and on 10 miles of railway from Tuscarora to Port Carbon was 4 cents per ton per mile, making a total charge of 5.5 cents.⁵

By 1832 figures are found based on the early operation of a more perfect road. In a debate over the proposed subscription to the stock of the Baltimore and Ohio Railroad, Mr. Smith of Maryland read a statement of the cost of transportation by that railway. For transporting a barrel of flour from the Point of Rocks to Baltimore, a distance of about 70 miles, the rate was 27 cents. For a ton of iron the charge was \$3.17, making a ton-mile rate of 4.5 cents on iron.

It was customary to distinguish in these early years between two elements in the charge—the cost of transportation and the toll. Furthermore, it was thought necessary to provide for tolls on vehicles

¹*House Ex. Doc.* No. 101, 1831–32, 22d Cong., 1st sess., III, pp. 149 *et seq.*

²*Ibid.*, 156.

³*Debates of Congress*, 1835–36, 24th Cong., 1st sess., 4495. This may refer to passenger fares only.

⁴*House Ex. Doc.* No. 18, 1831–32, 22d Cong., 1st sess., I, p. 164.

⁵*Ibid.*, 178.

not belonging to the company which might run upon a company's right-of-way, and hence limitations upon tolls were included in many charters, which did not always imply a limitation of maximum rates. Such a direct limitation does, however, appear in the act authorizing the construction of a lateral branch of the Baltimore and Ohio into the District of Columbia. The provision was that rates of toll in the District should not exceed 3 cents per ton-mile for toll and 3 cents per ton-mile for transportation, making a maximum rate of 6 cents per ton-mile. There were certain additional rates per mile for parcels under 200 pounds in weight (table 88).¹

TABLE 88.

Parcels weighing 50 pounds or less, or measuring 2 cubic feet.....	1 cent.
Parcels weighing 50 to 200 pounds.....	2 cents.
Parcels weighing 200 to 1,000 pounds.....	half-ton rates.
Parcels weighing over 1,000 pounds.....	ton rates.

This was an early and pronounced expression by act of Congress of the wholesale principle according to which small shipments are charged for at a higher rate than large ones. There was also a maximum rate of 12.5 cents "for taking up and setting down" a passenger carried less than 4 miles within the District. These types of provision seem to have been widely copied.

The maximum rates were close to the actual rates charged, as will be seen by reference to data given earlier in this chapter.² It is also noteworthy that the canal companies complained that they were suffering because by their charters they were limited to lower rates than the railways, an illogical complaint from those who argued that canals furnished much cheaper service.³ In the report of the president of the Baltimore and Ohio for 1836 it was stated that rates on that road were too low, in consequence of which the road was in poor financial condition, and he quoted a list of authorized rates on other roads to prove his point, showing a higher rate on six roads—three northern and three in Virginia. The prevailing idea of the president seems to have been that rates should be based upon the cost of the service, taking account of weight, bulk, distance, and grade.

In 1830 a bill was introduced into the House of Representatives to aid the Baltimore and Ohio Railroad by a stock subscription. It was favorably reported by the committees, but not acted upon. The Baltimore and Ohio was then engaged in its long conflict with the Chesapeake and Ohio Canal Company, and both had been aided by the Government and were seeking further assistance. This controversy was of more significance than a mere quarrel between two

¹*Laws and Ordinances relating to the Baltimore and Ohio Railroad Company*, 10; cf. also *Debates of Congress, 1830-31*, 21st Cong., 2d sess., 418-422.

²Cf. also Reizenstein, *Economic History of the Baltimore and Ohio Railroad, 1827-1853*, in *Johns Hopkins University Studies*, XV, 41.

³*House Ex. Doc. No. 18*, 22d Cong., 1st sess., I, 193, 197, 1831-32.

rival corporations. It typifies the general situation that existed in 1830 as regards the transportation question. It was not the fate of the Chesapeake and Ohio Canal only that was decided, but also that of many others. The Chesapeake and Ohio itself was the result of years of agitation and planning, for it had sprung from the ruins of an earlier project by the Potomac Company. The founders of the new canal plan had decided upon it only after much discussion, in which the railway had figured as a possibility and been rejected. In the minds of most men of the time a canal was the perfect means of transportation.

Four factors were, however, entering in, and vigorously working a revolution—for vigorous and swift-moving was the coming change, when in less than 40 of the 100 years allowed by “far-sighted” and “prudent” business men for the iron road to even become practicable, it had crossed the continent and was the greatest factor of the nation’s growth. These factors were: (1) the growing extent and importance of the West; (2) the decline, real or feared, of the Atlantic coast States south of New York; (3) the realization of the limitations of canals from topographical conditions, mountains, lack of water, etc.; (4) rapid progress in railway invention and improvement. All these were focussed on the situation in Baltimore, and in addition the rivalry with New York City gave point and lent powerful assistance to the growth of railroad favor. The conflict between the railroad and the canal companies was a powerful educational force for the people and for Congress, and its stages fix the period when canals began to be supplanted by railways in Congressional esteem.

In 1829 the Baltimore and Ohio presented a memorial to Congress asking for Government aid. The Senate committee which reported on it said “that public confidence in this description of road is rapidly increasing. In England such roads have become numerous, and several successful experiments” have been made in the United States. In the House, Mr. Mercer, president of the Chesapeake and Ohio Canal Company, was chairman of the Committee on Roads and Canals, an illustration of mid-century politics that makes it impossible to look for unbiased reports from this committee. He writes, however, in a private letter under date of May 14, 1830:

“In the existing temper of the Committee on Roads and Canals [Senate], I clearly perceive that any memorial which we might present would be unfavorably regarded, and I had too little reason to hope a more favorable result from the House while the present delusion prevails in favor of the railroad.”¹

The nature of this “delusion” is apparent in the words of a speaker in the House at the session during which the above was written. Representative Carson, in the speech already quoted on the Buffalo-New Orleans road, referred to railways as outstripping canals here

¹Ward, *The Early Development of the Chesapeake and Ohio Canal Project*, in *Johns Hopkins University Studies*, XVII, 104.

and abroad, and exclaimed, "Yes, sir; the honorable gentleman from Virginia (Mr. Mercer) must hear the appalling, the heart-rending fact, that this mighty monument (the Chesapeake and Ohio Canal) must fall, and must give place to the superior improvement of railroads."¹ The same tendency is shown in 1830 in the movement to authorize the transfer to railways of land-grants previously made to canals. Ohio petitioned for the right to devote her 2-per-cent fund to the construction of railways instead of canals, and the Senate committee reported favorably, on the ground that recent improvements had caused the more intelligent to deem the railway superior to the canals in many if not all respects.²

At the next session of Congress the House resolved to inquire into the expediency of authorizing Indiana to substitute a railway in place of a canal for connecting the Wabash with Lake Erie, and³ during the session which followed the same action was taken with regard to the Illinois and Michigan Canal in Illinois.⁴ In 1833 an act was passed which provided that land granted to the State of Illinois for the above canal might be "used and disposed of by the said State for the purpose of making a railroad instead of a canal," and in the same year similar acts were passed for Ohio and Indiana.⁵

On the other hand, in 1835-36, a proposition to change the Cumberland Road to a railway failed,⁶ and as late as 1846 a committee in its report said: "It is not intended to maintain that a railroad is, in the abstract, a better medium of conveyance than a navigable stream,"⁷ and in the same year it was thought necessary by another committee to explain that the nature of the country made canals impracticable.⁸

Two odd manifestations of popular sentiment appear in the debates—one that steam-propelled vehicles could be used on common roads, and so have no need of the railway, and the other that roads were best suited to a democracy and that railroads were "moneyed powers." Canal supporters as well as those interested in turnpikes encouraged the idea that steam carriages could be used on the common roads. In 1832 Congress printed the report of an English committee on the use of steam carriages on common roads. This committee had been appointed in 1831 to consider what tolls should be imposed on such vehicles and what utility the public might expect from them. The committee reported in favor of protecting such steam carriage from the excessive tolls exacted by the turnpike companies and announced

¹*Debates of Congress*, 1829-30, 21st Cong., 1st sess., 669.

²*American State Papers, Public Lands*, VI, 138.

³*House Journals*, 1830-31, 21st Cong., 2d sess., 147.

⁴*Ibid.*, 1831-32, 22d Cong., 1st sess., 71.

⁵*United States, Laws*, 1827-33, VIII, 833, sec. 1.

⁶*Debates of Congress*, 1835-36, 24th Cong., 1st sess., 4540.

⁷*Report No. 301*, 1845-46, p. 3, 29th Cong., 1st sess., II.

⁸*Senate Doc. No. 152*, 1845-46, 29th Cong., 1st sess., IV, p. 8.

that they believed the use of such vehicles on common roads to be one of the most important of improvements in transportation. The evidence showed that: (1) carriages could be propelled by steam on common roads at 10 miles per hour; (2) they could do this with a load of 14 passengers; (3) their weight, including fuel, water, and attendants, would be under 3 tons; (4) they could ascend and descend hills with facility and safety; (5) they were safe for passengers; (6) they were not public nuisances; (7) they were speedier and cheaper than horse-drawn wagons; and (8) their use would result in less wear and tear on common roads.¹ But this agitation in Congress resulted in nothing practical, any more than did that, from 1830 to 1838, over the Cumberland Road and the efforts to turn it into a railway.

A more important matter was the railway mail service. The railroad began to be used in a small way in 1834. At this time stages could in some places make better time, and reference has been made to the case where the carriage of the mails between Baltimore and Washington was taken away from the railroad and given to a stage company, because of the poor service on the railroad. The question of mail transportation by rail first appears in the annual report of the Post Office in 1832. On July 7, 1838, an act was passed in Congress making all railways in the country United States post-routes. The intervening six years were ones of rapid progress. In 1835 the Postmaster General wrote that to be forced to abandon railway mail service and resort to stages would cause this important branch of Government activity to "sink into contempt."²

Two apparently opposed ideas appeared in Congress as elsewhere, as to the nature of the railway. One was competition and the other was monopoly. Both were, in the beginning, purely speculative, as there was no experience of competition on which to base reliable conclusions. In a debate in 1836 one member of the House announced his willingness to vote for any check which could be put upon the monopoly of railroads. All this in spite of the fact that for many years afterward railway capital was relatively so scarce and unproductive that undue competition was impossible. The argument of private use was urged against railways in behalf of both turnpikes and canals, not foreseeing that the latter were even less adaptable than railways. Monopoly, however, meant the exclusive right to the use of the railway rather than to the sole occupancy of a given territory. So Benjamin White, engineer, wrote, in a letter appended to a Congressional document:

"I consider a long line of railroad passing from Baltimore over the mountains as being odious in this country as a monopoly of the carrying, which it necessarily must be."³

¹*House Ex. Doc. No. 101, 1831-32, 22d Cong., 1st sess., III.*

²"History of the Railway Mail Service," in *Senate Ex. Doc. No. 40, 1884-85, 48th Cong., 2d sess., I, 37.*

³*House Ex. Doc. No. 18, 1831-32, 22d Cong., 1st sess., I, 173-175.*

Early railway charters in England did not fix maximum rates for the conveyance of passengers. Since early charters in the United States quite commonly fixed maximum rates, and the act of Congress authorizing the construction of the Washington Branch of the Baltimore and Ohio did so, at the same time that English practice did not, it would seem to indicate an early belief that competition among railways would not be effective. The change from a common carrier in the sense of the canal and road to that of a railway, where individuals might not freely place their own vehicles, seemed far more significant than it does at present.

The classic case of monopoly in the first ten years of railroads was that of the Camden and Amboy, discussed in a previous chapter. This road managed to force combinations with all others in the intervening territory and also to escape its obligations to the State, by which it had obtained its privileges. The grievances grew until 1847, when a memorial for relief was presented to Congress. The application was based on two grounds: one that the rates on the road were uneven and gave an advantage to inhabitants of New Jersey over those of other States, a discrimination not only unjust but unconstitutional, as the Constitution provided that "the citizens of each State shall be entitled to all the privileges and immunities of citizens in the several States"; and second, by the authority of Congress over post-roads, as it was claimed that the Camden and Amboy was accustomed to hold the mails from 2 o'clock in the morning until 9 in order to send but one train for passengers and freight. The States' rights doctrine was invoked to save the State of New Jersey from interference in its domestic affairs and the memorial was referred to a committee, where it was lost to sight.¹

Another idea, closely connected with the monopoly idea, was that railroads were "undemocratic." It was stated that railways were "vastly inferior (particularly as a public work, and in a republican country) to canals, both as to conveyance as well as economy." In the debate on the proposition to change the Cumberland Road to a railway, some members of Congress objected on the ground that as their constituents were plain, honest men, they wanted common roads. Let gentlemen of wealth and aristocrats build railways and travel on them, said they; our constituents "are all democratic republicans," and they want a road on which they can all travel together; "no toll, no monopoly, nothing exclusive—a real people's road." Such ideas were real, and were specially prevalent in sections where opposition to a so-called "moneyed power" was strongest. Like banking, the railway business required considerable capital, a corporate organization, and various restrictions on its use and form.

Works of internal improvement were, even in the eighteenth century, regarded as peculiarly related to the Government, and it is

¹*Cong. Globe*, 1847-48, 30th Cong., 1st sess., 823.

not surprising that much was said in Congress in favor of Government construction of railways. The Cumberland Road, though of doubtful constitutionality, formed a precedent, and in addition to the social and economic advantages early apparent, the Federal Government's desire for an efficient mail service, and to enhance the value of public lands, was an important factor in promoting railways. John Stevens in 1812 suggested that railways ought to be undertaken by the Nation. In 1830 the petition of the Baltimore and Ohio for aid was favorably reported on, in the belief that it might afford a fair experiment "on which it can be decided whether a canal or a railroad ought to be made over the mountains under the auspices of the National Government."¹

The citizens of Adams County, Illinois, in 1831, prayed that Congress would build a railroad from Buffalo to the Mississippi River.² The subject was again presented in 1833, and the Senate agreed to investigate concerning the construction by the Federal Government of a railway from Jacksonville, Florida, to the mouth of the Suwanee River. There are many instances of the proposal to use United States troops. Had the tendency to actual construction been carried out, it would, under the prevailing political ideas of the times, have involved many nice questions of States' rights. In answer to a question raised on this point it was said that such a road after construction would be "surrendered to the States, and the States would put their cars under the direction of their agents on it."

The indirect participation, however, of land-grants or stock subscription created a very different situation. It was then thought only necessary to safeguard the Government interests and perhaps to secure favorable mail contracts. In the case of a proposed stock subscription, the Secretary of the Treasury was to see that a Government proxy voted the shares. There was practically no question of Government ownership and operation, although a bill of 1836 to authorize contracts for carrying the mail, which provided for a lien by the Government upon the property of the railroad, was opposed on the ground that the Government might be forced to take over the road under the lien and either operate it or forfeit the charter. The bill failed of passage. Indeed, the growth of the States' rights doctrine after the compromise of 1821 soon made Government ownership and operation a political impossibility. Railways might, however, still be regarded as an investment, and numerous proposals were made for such investment, but none succeeded.

The one great exception to this popular state of mind is shown in the case of the proposed Pacific Railways, in 1845-1850, when Asa Whitney's scheme for a road owned and operated by the Government

¹*Report No. 211, 1829-30, 21st Cong., 1st sess., II.*

²*Senate Journal, 22d Cong., 1st sess., 67, 1831-32.*

was received with much public favor. The appeals made were based on social and military needs and on hostility to corporate activity. Again the cry was for a "people's road" and against monopoly; also, the road was to be constructed largely over Government lands.

Mention has already been made of the regulations contained in the charter of the Washington Branch of the Baltimore and Ohio. The chief point of contact between the Government and railways was in the transportation of mail, over which many disputes arose. DeWitt Clinton, in 1832, in the report for the railway from Ohio to the Hudson River, advocated that the United States secure an interest in all railroads, or at least the ability to control them, lest the transportation of the mail be hindered.¹ Jackson's message of 1831 favored railways in reference to the mail, and in that of 1835 he used the following expressions:

"Already does the spirit of monopoly begin to exhibit its natural propensities, in attempts to exact from the public . . . the most extravagant compensation. If these claims be persisted in, the question may arise whether a combination of citizens, acting under charters of incorporation from the State, can, by a direct refusal, or the demand of an exorbitant price, exclude the United States from the established channels of communication between the different sections of the country; and whether the United States cannot, without transcending their constitutional powers, secure to the Post Office Department the use of those roads, by an act of Congress, which shall provide within itself some equitable mode of adjusting the amount of compensation."

Jackson also suggested that the amount to be paid for the transportation of the mails be fixed by law.² The report which was made by the Postmaster General was equally emphatic. He called attention to the power of Congress over post-roads, and raised the question whether after a railway had been established by Congress as a post-road it would be possible for the company to obstruct the carriage of the mails, and in case it did, either directly or by the adoption of unreasonable rates and inconvenient hours, the Government might not place its own locomotives on the road, and so fulfill the law. He spoke definitely of the "rights which the Government may have to use railroads owned by private companies for public purposes."³ The attitude of President, Congress, and statesmen was that of great hesitancy in pushing the matter of intervention, and it was hoped to avoid the question altogether.

It was the beginning, however, of a long struggle. As noted above, the railways were all made post-routes in 1838, and the Postmaster General directed to use them for all transportation of the mail, if it could be done upon reasonable terms, and in 1839 maximum rates

¹*House Ex. Doc.* No. 133, 1831-32, 22d Cong., 1st sess., IV.

²*Senate Doc.*, 1835-36, 24th Cong., 1st sess., I, 26-27. Message of President Jackson, Dec. 7, 1835.

³*House Ex. Doc.* No. 2, 1835-36, 24th Cong., 1st sess., I, 405, Report of the Postmaster-General, Dec. 1, 1835.

were fixed by Congress.¹ A comprehensive act was passed in 1845 which divided railway routes into three classes on the basis of speed and importance, and fixed maximum rates for each class.² Some members of Congress seemed to think the Government in its dealings with the mails ought to foster competition with the railways, and not adopt them for all mail transportation so quickly; but this idea did not last long. Such propositions seem to have been rather in the nature of threats to keep down the railway charges than expressions of serious purpose.

Public defense and the opening up of Government lands were considerations that did have much weight. One case of Government regulation occurred in Florida in 1838, when an act was passed confirming an act of the legislative council of Florida incorporating the Florida Peninsula Railroad and Steamboat Company.³ By this act, Congress, during Florida's existence as a Territory, might at any time prescribe and regulate the tolls of the company. The company was prohibited from doing a banking business, and subject to other regulations. But this was of course a field analogous to that of the District of Columbia. The same was true in the case of railways constructed through the public lands.

Indirect aid to railways took many forms, as the railway question was mixed up with the whole larger question of internal improvements. The general survey bill of 1824 authorized the President to cause the necessary surveys, plans, and estimates to be made for the routes of "such roads and canals as he may deem of national importance, in a commercial or military point of view, or necessary for the transportation of the public mails"; and a limited number of civil engineers and officers of the Engineer Corps of the Army was placed at his disposal, with an appropriation of \$30,000 annually to cover expenses. The act made no mention of railways, although, as shown above, railways had clearly been discussed in Congress, and within two years a part of the fund was used for surveying routes to be used for canals or railways, and soon Government engineers were employed in surveying, planning, and superintending the construction of numerous lines for the new means of transportation. The wide demand for their services encouraged the study of civil engineering among the cadets of the United States Military Academy. The first surveys made by the Government were for a canal or railway over the old route from the headwaters of the James and Roanoke Rivers to the Great Kanawha, between 1825 and 1826. It brought no tangible result.⁴ The grants of assistance under the act to States and corpora-

¹*House Ex. Doc. No. 8, 1847-48, 30th Cong., 1st sess., II, 1319, Report of Postmaster-General, Dec. 6, 1847.*

²*United States, Statutes at Large, 28th Cong., 2d sess., V, chap. 43, sec. 19, p. 738.*

³*Ibid.*, 25th Cong., 2d sess., V, chap. 150, sec. 7, p. 253.

⁴*United States, Laws, 1821-27, VII, 239, chap. 276; United States, Statutes at Large, 18th Cong., 1st sess., IV, chap. 46, p. 22; House Ex. Doc. No. 83, 1826-27, 19th Cong., 2d sess., V.*

tions increased in frequency up to 1835, when some 13 different railway routes were reported by the Topographical Bureau as receiving aid. Roads and canals were far more frequently aided. The law was repealed in the session of 1837-38.

A statistical examination of the surveys reveals some interesting facts. Between 1824 and 1838 some 61 distinct railway surveys are mentioned in Congressional proceedings. Of these, 59 represent railways actually reported on or inquired into, one having been negatived, and another unspecified and indefinite. Thirty-nine of these surveys were for railway routes lying north of the Baltimore and Ohio Railroad, and of these, 10 lay west of the Allegheny Mountains. Naturally the latter were of a later date, 7 of the 10 being made between 1835 and 1839. South of the Baltimore and Ohio, some 21 distinct surveys were made prior to 1838, and a survey for a road from St. Johns to the Suwanee River and an estimate for one across the peninsula of Florida, which were made after the repeal, brought the number up to 23.

It will be seen that most of the Government aid was given south of the Baltimore and Ohio. All the States, however, save Illinois and Delaware, received some aid, although little was done in New Hampshire, North Carolina, and Florida. Georgia seems most favored, but there were several routes also in both Massachusetts and Alabama. There was a popular idea in these early days that railways were to run chiefly north and south, and it is interesting to notice that here the routes are largely east and west. It is also noteworthy that the majority of the surveys were made without reference to any relations, either subsidiary or auxiliary, to rivers or canals. Of significance is the fact that in most cases the routes of these Government surveys were early taken by railways; 10 of the 27 railways existing or in progress in 1835 had received the benefit of Government surveys, and these 10 are all included in the roads 25 miles or more in length. A comparison of a modern railway map with a map of these surveys shows how closely they have been followed. Table 89 gives a list of railway surveys made or proposed in accordance with the act of 1824.

During the first 20 years of the railroad era, no direct monetary aid was given by Congress. Before 1830 and after 1850 such aid was given to develop transportation, but although many attempts were made to obtain subscriptions from Congress to various enterprises, none was successful during the period. Between 1825 and 1830 the National Government had subscribed a total of \$1,293,500 to stock of four canal companies—the Chesapeake and Ohio, the Louisville and Portland, the Dismal Swamp, and the Chesapeake and Delaware. Naturally the first railways looked for like aid, and the charter of the Baltimore and Ohio contained provision for such aid. As early as 1828 a petition for financial help was laid before Congress and favorably reported from committee, but so late in the session

that no bill was submitted. The petition was renewed at the next session, however, and again was favorably reported, but the bill did not reach a second reading.¹

Such Congressional grants might be a donation of money outright or a stock subscription. The first would be more suitable in the case of a

TABLE 89.—*Railway surveys, made or proposed, in accordance with the act of 1824.*²

Year.	Purpose.	Name or location of road.
1824-26	Railway or canal....	Kenhawa (Kanawha) River to James and Roanoke Rivers.
1827	Railway.....	Baltimore and Ohio, preliminary examination.
OTHER RESOLUTIONS OR REPORTS.		
1827-28	Railway.....	Cayuga Lake to the Susquehanna River at or near Owego, N. Y.
1828	Railway or canal....	Tennessee River to Atlantic coast of Georgia.
	Railway.....	Baltimore and Ohio.
	Do.....	Hudson, N. Y., to Pittsfield, Mass. (\$327.08). ³
	Do.....	Owego to Ithaca, in New York.
	Do.....	Ithaca to Catskill, in New York (\$2,538.61).
1828-29	Do.....	Charleston to Hamburg, in South Carolina, aid promised.
	Do.....	Savannah River to Tennessee River.
	Railway or canal....	Tennessee River to Altamaha River.
	Means unspecified...	Hudson River to tidewater in Massachusetts.
	Railway.....	Hudson and Berkshire (\$885.19); Secretary of War directed to transmit report.
1829	Do.....	Catskill to Ithaca, in New York.
	Do.....	Charleston to Hamburg, in South Carolina (\$5,949.51).
	Do.....	Baltimore and Ohio, continued (\$6,685.83).
1829-30	Railway and canal...	Altamaha River to Tennessee River; report of survey and estimate submitted by Jackson.
	Railway or canal....	Tennessee River to Mobile River.
	Do.....	Along Connecticut River to Canada (appropriation for).
	Railway.....	Boston to Lake Champlain.
	Do.....	Terminal of Charleston and Hamburg to Lexington, Kentucky.
1830	Do.....	Augusta to St. Marks, Florida (negatived).
	Do.....	Catskill to Canajoharie, New York.
	Do.....	Pennsylvania canal commissioners aided by an engineer to determine method of crossing Allegheny summit of the Pennsylvania Canal.
1830-31 1831	Do.....	Baltimore and Susquehanna, aided in surveys.
	Do.....	Boston to Ogdensburg, New York (appropriation for).
	Do.....	Winchester, Virginia, to Harper's Ferry.
	Do.....	Portage Summit of Ohio Canal to Hudson River (examination of a route).

¹Reizenstein, *Economic History of the Baltimore and Ohio Railroad, 1827-1853*, p. 22; *Senate Doc. No. 5*, 1829-30, 21st Cong., 1st sess.

²This list is drawn from the reports of the Topographical Bureau (after 1830), reports of Engineering Department to the Secretary of War, resolutions of Congress, special messages showing the operations of the Topographical Bureau, etc. Where the exact date is given (*i. e.*, 1827, 1828, 1829, etc.) it is intended to indicate that during that year the Government engineers were actually employed on the works indicated. Where the date given is no more definite than a session (*i. e.*, 1827-28, etc.) some special mention is indicated.

³This and the following figures are totals expended up to Sept. 30, 1830. They are found in *Report No. 77 of Committees*, 1830-31, 21st Cong., 2d sess., p. 33, and are presented to give some idea of amount expended in individual cases.

TABLE 89.—*Railway surveys, made or proposed, in accordance with the act of 1824—Continued.*

OTHER RESOLUTIONS OR REPORTS—Continued.		
Year.	Purpose.	Name or location of road.
1831	Railway or canal....	Savannah and Tennessee Rivers; completing of drawings.
	Railways.....	Baltimore and Susquehanna, Paterson and Hudson River, Canajoharie; superintending construction of.
1831-32	Railway.....	Bennington to Connecticut River (see below, southern Vermont).
	Do.....	Genesee River to Allegheny River.
	Do.....	Cumberland, Maryland, to Hollidaysburg, Pennsylvania.
	Do.....	Washington to Annapolis.
1832	Do.....	Winchester to Harper's Ferry.
	Do.....	St. Francisville, Louisiana, to Woodville, Mississippi.
	Do.....	Williamsport, Pennsylvania, and Elmira, New York.
	Do.....	Hudson River to Portage Summit of the Ohio Canal.
	Do.....	New London, Connecticut, to Worcester, Massachusetts.
	Do.....	Stonington, Connecticut, to Providence, Rhode Island.
	Do.....	Mad River, Ohio, to Lake Erie.
	Railways.....	Boston and Providence, Baltimore and Susquehanna, Paterson and Hudson River; superintending construction of.
1833	Railway.....	Across southern Vermont; reconnaissance for.
	Railway or canal....	Pearl River to Yazoo River.
	Railway.....	Williamsport, Pennsylvania, to Elmira, New York; completing reports and drawings.
	Do.....	New London, Connecticut, to Worcester, Massachusetts; completing reports and drawings.
	Do.....	Hudson River to Portage Summit; completing reports and drawings.
	Do.....	Stonington, Connecticut, to Providence, Rhode Island; completing reports and drawings.
	Do.....	Mad River to Lake Erie; completing reports and drawings.
	Railways.....	Boston and Providence, Boston and Susquehanna, Paterson and Hudson River; superintending construction of.
1833-34	Railway.....	Falls of Ohio, via Indianapolis to Michigan City.
	Do.....	Williamsport and Elmira.
	Do.....	New York and Erie. ¹
1834	Do.....	Memphis, Tennessee, to Atlantic Ocean, ² reconnaissance for.
	Do.....	Across the peninsula of Michigan.
	Do.....	Winchester and Harper's Ferry Company; to ascertain propriety of granting right-of-way at Harper's Ferry.
SURVEYS REPORTED COMPLETED.		
1834	Railway.....	Williamsport, Pennsylvania, to Elmira, New York.
	Railway or canal....	Pearl River to Yazoo River, and a survey of "Yazoo Pass."

¹Same as Portage Summit to Hudson.²See under 1834-35, Atlantic to Mississippi.

TABLE 89.—*Railway surveys, made or proposed, in accordance with the act of 1824*—Continued.

OTHER RESOLUTIONS OR REPORTS.		
Year.	Purpose.	Name or location of road.
1834-35	Railway.....	Tennessee River to the Alabama River, expediency called for.
	Do.....	Will's Valley to the Alabama River, expediency called for.
	Do.....	Pointe Coupée to Opelousas; proposed.
	Do.....	Atlantic to the Mississippi; three routes: Northern route, Memphis to Augusta; Southern route, Memphis to Savannah; Memphis to foot of Cumberland Mountains.
1835	Do.....	Memphis, Tennessee, to Atlantic Ocean; examination.
	Do.....	Portland, Maine, to Quebec; examination.
	Do.....	Connecticut River to intersect Concord Railway in New Hampshire.
	Do.....	Boston to Whitehall, New York.
	Do.....	Detroit to Pontiac.
	Do.....	Detroit to St. Joseph's River.
	Do.....	Memphis to a point on Virginia-Tennessee line best adapted for continuation of the road to the Chesapeake.
	Railways.....	Lawrenceburg and Indianapolis, Madison and Lafayette, Columbus and Jeffersonville; ¹ in Indiana.
1835-36	Railway.....	Pensacola, Florida, to Columbus, Georgia.
	Do.....	Hartford, Connecticut, to Canada; bill for survey of.
	Do.....	Charleston to Cincinnati.
	Do.....	Merrimac River to Connecticut River.
1836	Do.....	Long Island Railroad.
	Do.....	Eastern shore of Maryland.
	Do.....	Belfast, Maine, to connect with a railway from Canada line to Quebec.
	Do.....	Various routes in New York, Connecticut, Massachusetts, Rhode Island, and North Carolina.
	Do.....	Pensacola to Columbus.
	Do.....	Charlestown to Cincinnati.
1836-37 1837	Do.....	In Missouri.
	Railway and canal...	Brunswick Canal and Railroad. No report of Topographical Bureau.
REPORTS OF (PREVIOUS) SURVEYS.		
1837-38	Railway.....	Western and Atlantic of Georgia.
	Do.....	Charlestown and Cincinnati.
	Do.....	Winchester and Potomac (probably same as Winchester and Harper's Ferry).
1838	Do.....	Milwaukee to Dubuque.
1839	Do.....	Milwaukee to the Mississippi River; message of the President, showing operations of Topographical Bureau.
1842-43	Do.....	St. John's to Suwanee River; report communicated by Secretary of War.
1843-44	Do.....	Across peninsula of Florida; estimate.

¹This probably coincided with part of the route proposed for survey in 1833-34; see above.

work carried on by the Government, the second in case of a stock company, and would only be accorded attention generally after plans of national importance had been made. In either case, the grant was in the nature of an investment, but the second scheme involved a more permanent relation on the part of the Government. It is probable that the counter-agitation to internal improvements of the third and fourth decades, with its fear of the power of large corporations, was the chief reason for withholding direct aid from railroad companies.

The efforts of the Baltimore and Ohio to obtain stock subscriptions from Congress lasted all through the period 1830 to 1850. The South Carolina Railroad, the Ohio Canal, and the Steubenville Railroad Company and three other roads made attempts, but no action was taken upon their requests. Various other requests were made, but all were denied.

There were, however, more or less indirect methods of aid which were employed. Among these was the import duty on railway iron. At the beginning of the railway era the tariff on iron was very high and growing higher, especially on rolled iron, to prevent competition with the American product. England was far ahead of the rest of the world in adopting the process of rolling iron and in using coke instead of charcoal for smelting. The rolled bars were inferior in quality to the hammered, but could be produced so much more rapidly and cheaply that their manufacture represented great progress and an exceedingly important element in railway cost. The supply of rails had to be drawn almost entirely from abroad. American manufacturers could not produce as cheaply, even with the duty added. In 1828 the Baltimore and Ohio presented evidence to Congress in favor of free importation of iron for the specific object of railways.¹

The objections of American manufacturers were met by pointing out that since they could not compete even with the duty they would at the least remain in the same position as before, while, on the other hand, the growth of public improvements would increase domestic consumption, and hence the demand for their output. Instead of money being sent abroad to pay the wages of foreign labor, an argument which seemed of great importance, a labor market would be created in this country which would more than counterbalance the loss. The Baltimore and Ohio bill was to admit iron and machinery solely for the use of that road, but was amended later to permit all roads to obtain their iron and machinery duty free upon proper representations that its sole use would be for the railway designated. The bill passed the Senate, but failed in the House, the opposition, led by the iron-producing sections of Pennsylvania, being strong enough to defeat it, in spite of the fact that most of Pennsylvania's iron went westward, and was effectually protected against competition

¹*Debates of Congress, 1827-28, 20th Cong., 1st sess., 678-689, 692-695.*

by the difficulty of transportation to or from the seaboard. The tariff of 1828 ("tariff of abominations") raised the duty on iron still higher. Two years later, however, iron actually used for railway purposes was given a drawback which reduced the tariff to 25 per cent ad valorem, meaning a duty of from \$16.25 to \$18.75 a ton, as compared with the duty of \$37 a ton of the act of 1828.

In 1832 Congress passed a "railway-iron bill," which amended section 9 of the tariff of 1830 to allow a complete drawback on iron imported by States or incorporated companies for railways or inclined planes and actually put to that use, the iron to be laid down within 3 years from the time of importation. There were some objections and complaints even about this act, however. It was uncertain in its meaning in certain respects, and it did not include manufactured iron, such as locomotives or their parts; further, railways were, if short, often built by individuals, who were barred from the benefits of the act; and finally, the time was too restricted. As regards the latter contention, direct aid was granted by Congress several times through acts remitting duties payable because the rails had not been laid in the specified time. Opposition to these remissions developed in the latter part of the decade, and an attempt was made in 1840 to repeal the act. It did not pass that year, but a similar act, effective in 1843, did pass at the session of 1841. The change seems in part due to the fact that the United States Treasury, full in 1832, was now empty, and the need of money was more pressing than the development of the country. This time the South argued for the bill, on the ground that in its section railway construction was backward, and that it had not benefited by the law as it should. Two speakers argued that the drawbacks were virtually grants of money in aid in internal improvements.

With the recovery of the business of the country after the panic of 1837 two opposing forces crystallized. On the one hand were the iron producers and manufacturers, who demanded protection for their output, and claimed that they were able to meet the railways' demand, and on the other hand were the railway companies, increasing as rapidly as the supply of capital and labor would permit. The iron and coal deposits lacked access to markets; the railways needed iron and coal and constituted the great bulk of the demand for these two products. The ironmasters urged that if railways were built they could supply the iron; the railway projectors said they needed iron to build their railways. It is worth noting that later, when the mines had been rendered accessible and production cheapened by railway development, the iron-producers were much strengthened in their struggle for protection, and their advantage was detrimental to the railways.

The fresh crop of railways which sprang up after the subsidence of the panic of 1837, and their relatively rapid rate of construction,

helped on the demand for free railway iron. In spite of the increased facilities for production and marketing, the demand was greater than the supply, prices rose, and rails were imported. The effect of this demand was felt not only on the better equipped furnaces, that had begun the use of anthracite coal in smelting, but also in the revival of a number of abandoned charcoal furnaces, whose product came into the market. The low tariff of 1846 caused a decline in domestic output from 765,000 tons to 564,755 tons from 1846 to 1850.

The tariff of 1842 had been avowedly protective. It was followed by a flood of protests and memorials for relief from various railways. The Senate in 1842-43 passed two bills for the relief of railways, but they failed in the House. Fourteen memorials were received for aid in the next session, and also in 1844-45, when several bills for remission of duties were introduced, and one, in favor of Michigan, was passed by the Senate.¹ The advocates of free railway-iron, however, were not strong enough to carry their point. The growth of a railway lobby appears after the act of 1842.² In the election of 1844 the Democrats came into power on a low-tariff program, and the act of 1846 which resulted did lower most articles. On railway-iron, however, the duties averaged somewhat higher, but as the price of iron had fallen, the result was cheaper iron in fact, though the act itself was no concession to railway interests. This act was the first to abandon the old discrimination between hammered and rolled bars, indicating a decided advance in methods of manufacture in this country, as the former tariff had been intended to protect our manufacturers who produced hammered bars alone. No further efforts were made until after the period covered by this volume.

Sundry efforts were made to grant aid to railways in connection with the mail service, sometimes by special appropriations or land-grants, either as donations, with reference to future service, free or at reasonable rates; or as loans or investments, to be repaid by service; and also by general contracts for mail service, with the purpose to aid. Of course the same grant might be considered from two points of view—as an aid or as payment for service. The mail-service argument was one of the earliest and strongest used for railway aid. It first appeared when the petition of 1819 was presented to Congress by Edward Dearborn, was revived in connection with the survey bill of 1824, and appeared in the debates over the stock subscription to the Baltimore and Ohio in 1832. It seems to have been more or less used in practically every debate in which it was pertinent. In 1838 and 1839 the Selma and Tennessee Company presented a memorial, seeking a right-of-way and preemption, and in return proposed to furnish the Government with transportation service, the memorial

¹*Senate Journals*, 1843-44, 28th Cong., 1st sess, index; *House Journals*, 1843-44, 28th Cong., 1st sess., 327; *Senate Journals*, 1844-45, 28th Cong., 2d sess., 223.

²*Cong. Globe*, 1843-44, 28th Cong., 1st sess., app., 680-682.

stating that the land would be paid for hereafter, at the minimum price, by the transportation of the mails, munitions of war, etc.¹ There are other instances, also, where the request or proposal for aid was coupled with an offer of return in service.

But the chief conflict between the Government and the railways at this time was over the contracts for mail service between the companies and the post-office. Before the time of the railway a system of contracting for the mails had been adopted, based upon competitive bidding. Reliance was put upon the effectiveness of competition to secure reasonable rates, and during the stage-coach days the system worked out satisfactorily. After the entrance of the railway, however, complaints began to appear that the Government was paying exorbitant rates. Jackson, in his message of 1835, suggested that rates should be fixed by law, and in the next year the Postmaster General, as referred to above, asked for an amendment to the law relative to contracts for the mails. The Committee on Post Office and Post Roads reported in favor of adopting a system of contracting for mail transportation in place of the old-time system of bids.² The time, it was argued, was peculiarly favorable, for the railroads needed money and the Federal Treasury was full. The essentials of the scheme were: (1) long-time contracts; (2) the consideration to be paid in advance; (3) in case of a perpetual charter the Government to take a lien on the road as security.

In accordance with this report, a bill was introduced to authorize contracts for carrying the mail. The Postmaster General was to receive propositions from the railway and submit them to Congress, and the Government was to have a lien on the road in proportion to the amount paid. The bill failed to pass, and nothing more was done in this line until the act of 1838, establishing post-roads. A year later this was amended, to the end that no more than \$300 per mile per annum should be allowed for the conveyance of daily mails.³ The law had before permitted as a maximum not more than 25 per cent above what similar transportation would cost in post-coaches. The indefiniteness of this provision made the law practically unworkable, and the \$300 provision was added in order to remedy its weakness.

The next move was made in 1845. The expansion of the postal service made new arrangements necessary. A bill was passed entitled "An act to reduce the rates of postage, to limit the use and correct the abuse of the franking privilege, and for the prevention of frauds on the revenues of the Post Office Department." It provided, among other things, for a classification of mail routes on the basis of the size of the mail and the importance and speed of the service. It was made lawful for the Postmaster General to contract with any railway

¹*Senate Doc. No. 184, 1838-39, 25th Cong., 3d sess., III.*

²*Ibid.*, No. 291, 1835-36, 24th Cong., 1st sess., IV.

³*United States, Statutes at Large, 25th Cong., 3d sess., V, chap. 4, p. 314.*

company for carrying the mail, either with or without advertising, provided that not more than the \$300 allowed by the law of 1839 be paid to railways of the first class, nor more than \$100 or \$50 be paid to second and third class lines respectively. On the whole the idea that lay back of these proposals seems to have been largely composed of a desire to grant direct aid to railways, without in the least realizing the burden imposed in return. Little as the future expansion of railways seems to have been practically foreseen, the growth of the mail service was still less anticipated. There were numerous proposals of this sort presented to the Senate in various fashions. The movement was considerable and long-continued. The proposals were usually connected with complaints of unsatisfactory service and high rates, with provisions for regulating the same. In no case, however, was such aid granted. The last proposal seems to have been in the session of 1847-48, when a resolution passed the House to inquire into the expediency of making 20-year contracts for mail service, and of granting these contracts on such terms that a part of the compensation might be used to complete unfinished portions of roads. A distinction was made between carriage of mails and munitions of war and troops. The latter were often excepted from transportation charges.

THE PACIFIC.

Railways to the Pacific were a distant dream from the earliest days, when no proper estimate of the difficulties in the way, or of the means by which they could be overcome, was possible. The little New England road of the first decades which rejoiced in the title of the Atlantic and Pacific is an illustration, and this was not the only dream of its kind. There is a certain romance to be found in all the history of Pacific railroading.

There were two ways by which the connection between the oceans might be made—one directly across the United States to the western ocean, the other by the isthmian region, including the whole extent of narrow land from Tehuantepec to Darien. Transit in this region was actually established as early as 1517, four years after the discovery of the route by Balboa, and Charles V had an examination made of the possibility of connecting the head of navigation on the Chagres River with the Pacific. Spain was active in developing communication across the isthmus, and a lucrative trade followed which was continued until the close of the eighteenth century, when the old routes fell into disuse. The gold and silver of Peru and the rich merchandise of the Asiatic trade were transshipped at Panama, carried across the isthmus on pack-animals, and then shipped to Spain. Early in the nineteenth century Von Humboldt's visit to the isthmus and his account of the topography and conditions there aroused new interest in the inter-ocean highway.

The Spanish colonies revolted from the mother country in 1822, and the subject of isthmian transportation was taken up in a certain degree by the various States and by sundry private companies, of French, English, Dutch, Mexican, and American origin, from 1827 to 1850, closing with the Clayton-Bulwer Treaty of 1850. The formulation of the Monroe Doctrine in 1823 made the interest of the United States in the matter permanent and vital. In 1825 the House resolved that the Committee on Naval Affairs be instructed to inquire into the expediency of establishing a line of communication between the Atlantic and Pacific Oceans, through the Isthmus of Panama.¹ No action was taken at this time, but a similar resolution was passed the following year, and a report was made.² Just at this time an American, Aaron H. Palmer, of New York, was endeavoring to float an Isthmian enterprise.

Ten years later came a new request for inquiry into the isthmian question. Charles Biddle, in one of the most interesting episodes in the varied series relating to connection between the Atlantic and the Pacific,³ obtained a charter in his own name for a railway from Cruces on the Chagres River to the Pacific, a distance of 15 miles. The Government did not approve of his action. There were sundry other proposals, but not until 1846 did any event of national importance in this respect take place. A treaty was then made with New Granada for securing transit rights across the Isthmus of Panama. The United States undertook, in consideration of an uninterrupted right-of-way across the Isthmus of Panama, to guarantee to New Granada, for a period of 20 years, the neutrality of this isthmus and the sovereignty of that State over its territory. The treaty was formally ratified in 1848, and its significance as a new development in the country's foreign policy was recognized in the report upon it by the Committee on Naval Affairs:

"This is a very wide departure from our foreign policy hitherto, and its justification is only to be found in the exigency of the case—the over-ruling necessities of our position with reference to our territories—on the Pacific. . . . This treaty, therefore, is but a single advertisement to all the world, that for the next twenty years at least, we will, with the permission of New Granada, cross the Isthmus of Panama, and you must not interfere."⁴

The recognition of the "necessities of our position," could not but come. It was the time of war in Mexico and of the acquisition of Texas and California, soon to be followed by the rush to California for gold. Emigrants to the Pacific coast were moving in such numbers as to make the question of their safety of vital importance. It was necessary to establish postal connections and to guard American interests.

¹*House Journals*, 1825-26, 19th Cong., 1st sess., 71.

²*Ibid.*, 1826-27, 19th Cong., 2d sess., 101, 200.

³*Senate Journals*, 1834-35, 23d Cong., 2d sess., 238.

⁴*Report No. 26*, 30th Cong., 2d sess., I, 15-16, 1848-49.

The Pacific Mail Company's Panama Railroad was the next and perhaps the most important, project. The private company backing it memorialized Congress for aid in 1848, referring to the great hardships of the passage around the Horn, and showing that this condition could be remedied by a railway not more than 50 miles long across the Isthmus of Panama. They had already obtained some concessions from the Republic of New Granada in their business of carrying the mail from the settled portions of the country to California and Oregon. Chief of these was the privilege, good for 99 years, of building a railway across the Isthmus. In view of the great service they were rendering, and of their ability to increase it, if suitably aided by the Government, they asked for cooperation and assistance. They requested no advance of money, but a 20-year contract for the transportation of army and navy stores, troops, public agents, and the United States mails, with compensation not to exceed the amount stipulated by law to be paid for the transportation of mails to Liverpool.¹

The Committee on Naval Affairs reported that it was the duty of Congress, in the light of the recent national expansion, to consider whether the country's interest did not justify a grant of aid that would secure the completion of this railway. The road's importance as a route of trade, and the necessity of its control by American interests, were also emphasized. They pointed out that it would in no sense be a rival of the proposed railway from the Mississippi to San Francisco, but rather a southern branch of the same route. Accordingly the committee recommended a grant of \$250,000 per annum as being an amount equal to 5 per cent on the proposed investment, and not greatly in excess of what the Government would pay for the stipulated services.² The bills as introduced changed the grant to an annual sum not to exceed three-fourths of the amount paid for the mails to Liverpool. This was equal to about \$300,000 per year, or \$6,000,000 for the 20 years.

The opposition to the bill turned on the subject of monopoly, and the propriety of the Government's making a contract with three citizens to the exclusion of all the rest. The absence of fixed rates was also made an objection, lest these be made exorbitantly high and yield enormous profits. It was urged that Congress ought to "induce competition," rather than confer exclusive privileges; and objection was made to connecting the United States Treasury with individual interests. The author of the bill himself, Benton, admitted the force of the monopoly argument, but thought the situation justified extraor-

¹*Report No. 145, 1848-49, 30th Cong., 2d sess., II, 669, Senate Misc. Doc. No. 1, 1848-49, 30th Cong., 2d sess., I.* There seems to be question how long the charter had to remain. It was probably 49 years.

²*Cong. Globe, 1848-49, 30th Cong., 2d sess., 40, 49, 50, 59, 382, 398, 525, House Journals, 1848-49, 30th Cong., 2d sess., 257.*

dinary measures. An amendment was offered, lowering the grant to the original \$250,000, making it run for 10 years only, and imposing certain regulations and restrictions on rates and traffic, showing the tendency to couple aid and control. The bill was laid on the table, and a second attempt in the following session, directed especially against a canal scheme, also failed.¹

There were other proposals, one for aid to a road across the Isthmus of Tehuantepec, contemporary with the Pacific Mail Company's proposal.² It was ably presented, and seems to have played a part in defeating the Aspinwall scheme, for some believed the route superior. Another was over the Nicaraguan route, and several treaties were made, but not ratified, to aid Cornelius Vanderbilt and others of the American Atlantic and Pacific Ship Canal Company, and its subsidiary organization, the Accessory Transit Company, which had established a communication between Greytown and San Juan del Sur by steamboat and stage, a route much traveled by emigrants from the East to California, until the concession was forfeited by the Nicaraguan Government in 1856 for non-compliance with certain terms. This was the only trans-isthmian wagon-road at the time.³ A railroad was finally built across the isthmus in 1855. At times the weight of opinion as to transcontinental communication turned towards a canal, at others towards a railway; but on the isthmus a railway seems always to have been thought a temporary expedient.

Meanwhile, as illustrated many times in the preceding pages, railways across the continent were fashioned of the stuff of dreams from early in the railroad era, and these dreams had their influence in the glory of Western progress and in the steady advance of the railroad westward.

¹*Senate Mis. Doc.* No. 30, 1849-50, 31st Cong., 1st sess., I.

²*Ibid.*, No. 50, 1848-49, 30th Cong., 2d sess., I.

³"Isthmian Canal Commission," *Report* No. 222, 1899-1901, in *Senate Doc.* No. 222, 1903-04, 58th Cong., 2d sess., XXIV, pt. I, 35.

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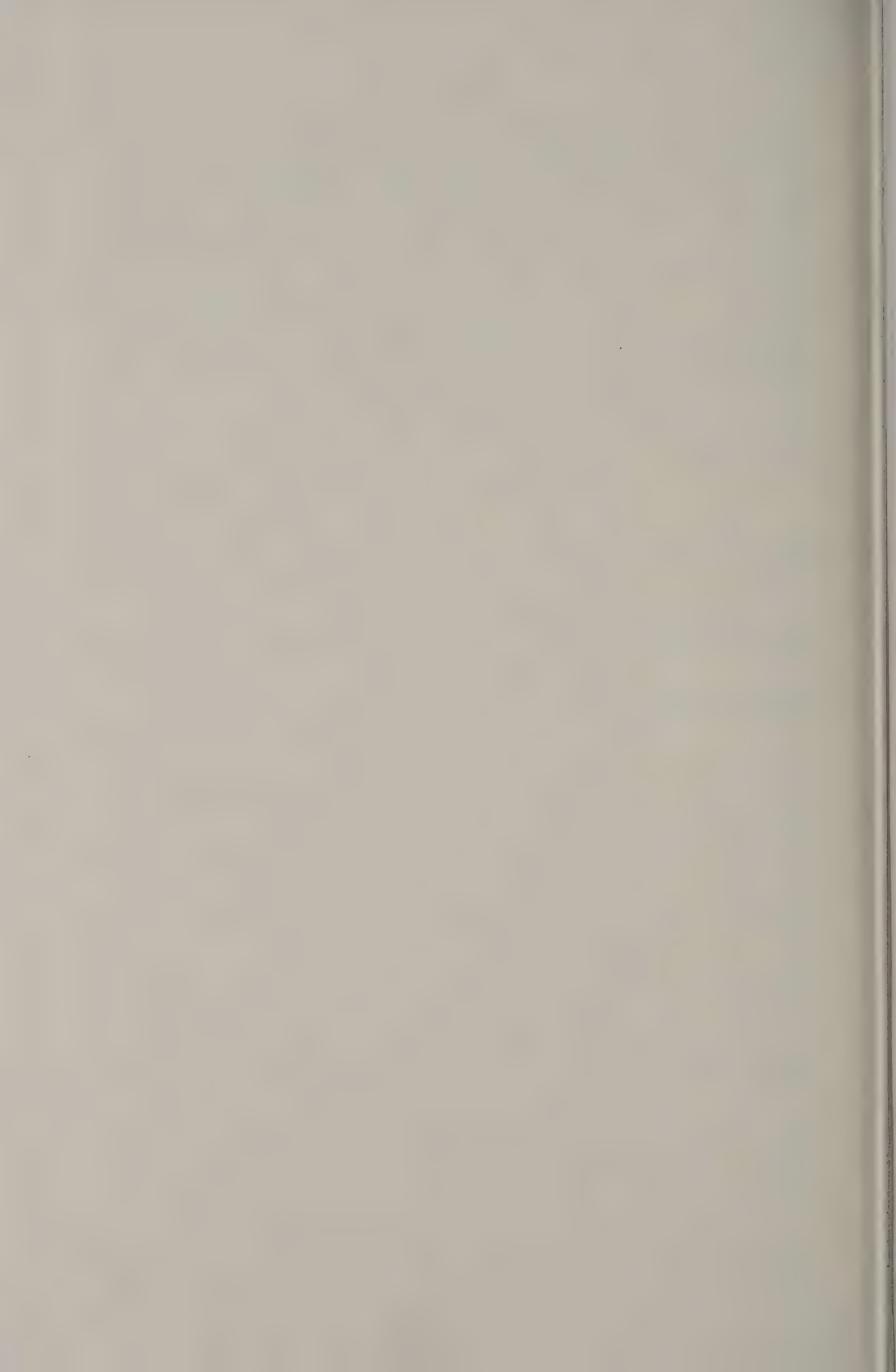
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EXPLANATION OF MAPS.

RAILROADS OF 1830 AND 1840.

The map for 1840 represents roads in operation by December of that year. The information upon which it is based was drawn from many sources, only the more important of which are enumerated. The maps of the time are rarely reliable, in that proposed or projected roads are frequently mapped as if actually constructed. Of many scores of railroad maps consulted, none proved entirely correct. The errors of early maps and reports frequently reappear in later ones.

Neither the data published in the extensive tables of volume IV of the United States Census of 1880 or those in *Executive Document* No. 896, of the House of Representatives, Thirty-fourth Congress, third session, lend themselves to accurate mapping for a given year and month, though both are highly valuable reports. The method followed in preparing the maps was essentially that of repeatedly checking one authority against another. Special histories exist in case of many of the large railroad systems. Annual reports of railroad presidents covering the desired dates are often printed in the *American Railroad Journal* or in *Hunt's Merchants' Magazine*. It was sometimes necessary to resort to county and local histories and to newspaper files.

In a few instances short railroads or parts of roads were operated for a time, but later were abandoned. In the anthracite coal fields of Pennsylvania many short lines were built between 1830 and 1850 to connect mines with points on rivers or canals; these were usually only a few miles in length and can not satisfactorily be shown on a map of small scale. In general, roads less than 15 miles long have not been mapped.

RAILROADS BUILT UP TO THE END OF 1830.

1. From Quincy to the Neponset River, Massachusetts, for transporting stone to Boston for the Bunker Hill Monument, 3 miles long; not a public road; opened in 1827.
2. A short line for conveying coal from the mines to the Lehigh River at Mauch Chunk, Pennsylvania, 9 miles; opened in 1827.
3. A line 9.25 miles long for conveying coal between Tuscarora and Port Carbon, Pennsylvania; opened in 1830; also a similar road 3.5 miles long at Pine Grove, Pennsylvania, opened in 1830.
4. The Carbondale and Honesdale Railroad in Pennsylvania, 16.5 miles long, opened in 1829 according to Poor and in 1828 according to Hadley.
5. Important lines under construction in 1830:
The Mohawk and Hudson from Albany to Schenectady, 17 miles; opened in 1831.
The Baltimore and Ohio Railroad, from Baltimore westward.
The South Carolina Railroad, from Charleston westward.

THE NEW ENGLAND AND MIDDLE ATLANTIC STATES (1840).

The New England roads are authoritatively reported in *The Monthly Chronicle*, Boston, 1840 and 1841, volumes I and II.

An excellent history of the railroads of the New England and Middle Atlantic States, including Maryland, is *History of the Railroads and Canals of the United States*, volume I (New York, 1860), by Henry V. Poor; volume II never appeared. The railroad progress in New York by years from 1832 to 1859 is shown by tables in volume XVI of the *American Railroad Journal*.

The railroads of Pennsylvania are reported by Ludwig Klein, a European engineer who accompanied von Gerstner; he states that he made a personal examination of the lines (*Journal of the Franklin Institute*, vol. xxvi, pp. 89-92, also 303 and 304). Many of von Gerstner's tables in the same volume, and in his two-volume report on American railroads, are not dependable.

The railroad from Portsmouth, Virginia, to Roanoke River, North Carolina, known as the Seaboard and Roanoke, is reported in the *American Railroad Journal* (vol. vi, p. 75) as in operation for its entire length in 1837, but in very imperfect condition. It was rebuilt, and in 1850 trains were running over the eastern portion only. The line from Macon to Barnesville, Georgia, not usually shown on maps of 1840, is reported by U. B. Phillips, *History of Transportation in the Eastern Cotton Belt*, p. 267.

The United States Census of 1880 omits any record of the Tuscumbia and Decatur Railroad in northern Alabama for 1840, but the official report of the chief engineer (*American Railroad Journal*, v, p. 18) says the road was operating its entire length in December 1834.

A railroad from Montgomery, Alabama, to West Point, on the Alabama-Georgia boundary, frequently mapped as completed in 1840, had only 33 miles in November 1840, according to the *City Directory of Montgomery* (1878, p. 23). The United States Census Report of 1880, volume iv, gives Louisiana one road 21 miles long in 1840. *Poor's Manual* (1869-70, p. xxvi) and *Hunt's Merchants' Magazine* (xxvi, p. 638); report 40 miles of railroads in the State.

The line from Lexington to Frankfort, Kentucky, is reported by the president of the road in May 1836 (*American Railroad Journal*, v, p. 634).

THE MIDDLE WEST.

The data upon which the few railroads of this region are mapped are mostly derived from State, county, and local histories and from the proceedings of historical societies in those States, checked by the United States Census of 1880, volume iv.

The United States Census of 1880 reports 22 miles of the Jefferson, Madison, and Indianapolis Railroad finished in 1840.

The *History of the Chicago and Northwestern Railroad*, page 7, says that the short railroad from Jacksonville to Meredosia, Illinois, was completed and accepted by the State, January 1, 1840.

Scribner's *Statistical Atlas*, plate xv, has a map showing railroads of 1840, evidently for the early months of 1840; it is nearly but not entirely correct. This map is frequently reproduced in later publications.

RAILROADS IN OPERATION IN DECEMBER 1850.

Lines less than 15 miles in length are not usually shown.

In preparing this map the same procedure was followed as in the case of the railroad map for 1840; the most important sources of information were:

U. S. Census of 1880, vol. iv, *Transportation*.

House of Representatives *Executive Document* No. 896, Thirty-fourth Congress, third session, p. 240 *et. seq.*

Poor, Henry V., *The History of the Railroads and Canals of the United States* (New York, 1860), vol. i, New England, Middle States, and Maryland. (Vol. ii was never published.)

Boston City Council, *The Railroad Jubilee*. An Account of the Celebration Commemorative of the Opening of Railroad Communication between Boston and Canada, September 17th, 18th, and 19th, 1851; contains railroad map, good for New England but not accurate for other regions.

Hunt's Merchants' Magazine, xxiv, pages 499 and 758, give detailed information for Massachusetts; page 258, for Pennsylvania; page 378, for New York. Volume xxvi, 638; xxviii, 107, and xxx, 121, for United States by States.

American Railroad Journal for the years 1849, 1850, and 1851. (Volumes xxii, xxiii, xxiv). Volume xxiv, 22 and 23, gives a list by States of all the railroads operating in the United States on January 1, 1851, with the mileage of each.

None of these authorities is free from error, but it is believed that accuracy has been secured by checking one report against another repeatedly and, where necessary, resorting to State, city, and county histories. The final verification was made from the *American Railway Guide*, compiled and published by Curran Dinsmore, New York, and by the *Scientific American*, said to be "the most complete and accurate guide published"; it gave the time-tables of all railroads carrying passengers and was corrected monthly. In this verification the *Guide* of May 1851 was used, as most of the time-tables there given are those of the closing months of 1850.

In case of a few railroads mapped, the formal opening did not actually take place until early in 1851, but the roads were practically completed in December 1850. For example, the Sandusky, Mansfield and Newark, in Ohio, was formally opened January 7, 1851, and the line from Cleveland to Columbus, Ohio, was opened in February of that year, and the Western and Atlantic reached Chattanooga at about the same time. The Seaboard and Roanoke Railroad from Portsmouth, Virginia, to the Roanoke River, North Carolina, was operated prior to 1840, afterward fell into poor condition and was rebuilding in 1850, only a portion of the line then being in operation. Many other lines were in progress.

RAILROADS OF 1860.

This map is based upon the time-tables of *Appleton's Railway and Steam Navigation Guide* of March 1861. The *Guide* of this date was used because inspection showed that most of the individual time-tables were dated for the closing days of 1860. The map thus made was then compared with the following:

1. "Map of railroad lines in actual operation in October 1860," page 62 of Theodore Clarke Smith's *Parties and Slavery*, vol. xviii of *The American Nation* series, edited by A. B. Hart (New York, 1906).
2. Map of the United States, December 31, 1860, plate CLXII in the Atlas to accompany the *Official Records of the Union and Confederate Armies*, issued under the auspices of the United States Government. (Not accurate for railroads of 1860.)
3. Map of the Railroads of 1860 in Scribner's *Statistical Atlas of the Census of 1880*.

Wherever discrepancies were found, the particular railroad was checked up from time-tables, local histories, and other records until accuracy appeared to be attained. The roads are mapped as far as scheduled passenger trains were then operating.

CANALS OF THE UNITED STATES.

As a rule, canals less than 12 miles in length are not shown on the map; abandoned canals are indicated by broken lines, and those still in use in 1915 by solid lines. A few of the latter are used very little. The Morris and Essex Canal in Northern New Jersey, from Phillipsburg to Jersey City, while not officially closed in 1915, was practically abandoned. Several canals, each a few miles in length, exist at points along the coast of the Southern States, but they are too short to appear on a map of this scale.

The data upon which the map is based are drawn from the following sources:

1. United States Census of 1880, volume iv, *Transportation*.
2. Report of the Commissioner of Corporations, Herbert Knox Smith, on *Transportation by Water in the United States*, Part I. (Washington, 1908.) (Map.)
3. *Preliminary Report of the Inland Waterways Commission*, Senate Document No. 325, Sixtieth Congress, first session. (Washington, 1908.)
4. *History of New York Canals*, two volumes, by Noble E. Whitford, State Engineer's Department, Albany; published by State of New York as a supplement to the State Engineer's Report of 1905.

NAVIGABLE RIVERS OF THE UNITED STATES.

The rivers indicated as navigable are those so mapped by the United States Bureau of Corporations in its Report on Transportation by Water (Washington, 1909). The information for the Bureau of Corporations map was taken from the annual reports of Chief of Engineers of the United States Army. Rivers having a minimum depth of 3 feet at low water for 20 miles or more, and which carried over 100,000 tons of freight in 1910, are indicated by solid lines. The tonnage statistics are from the United States Statistical Abstract for 1912.

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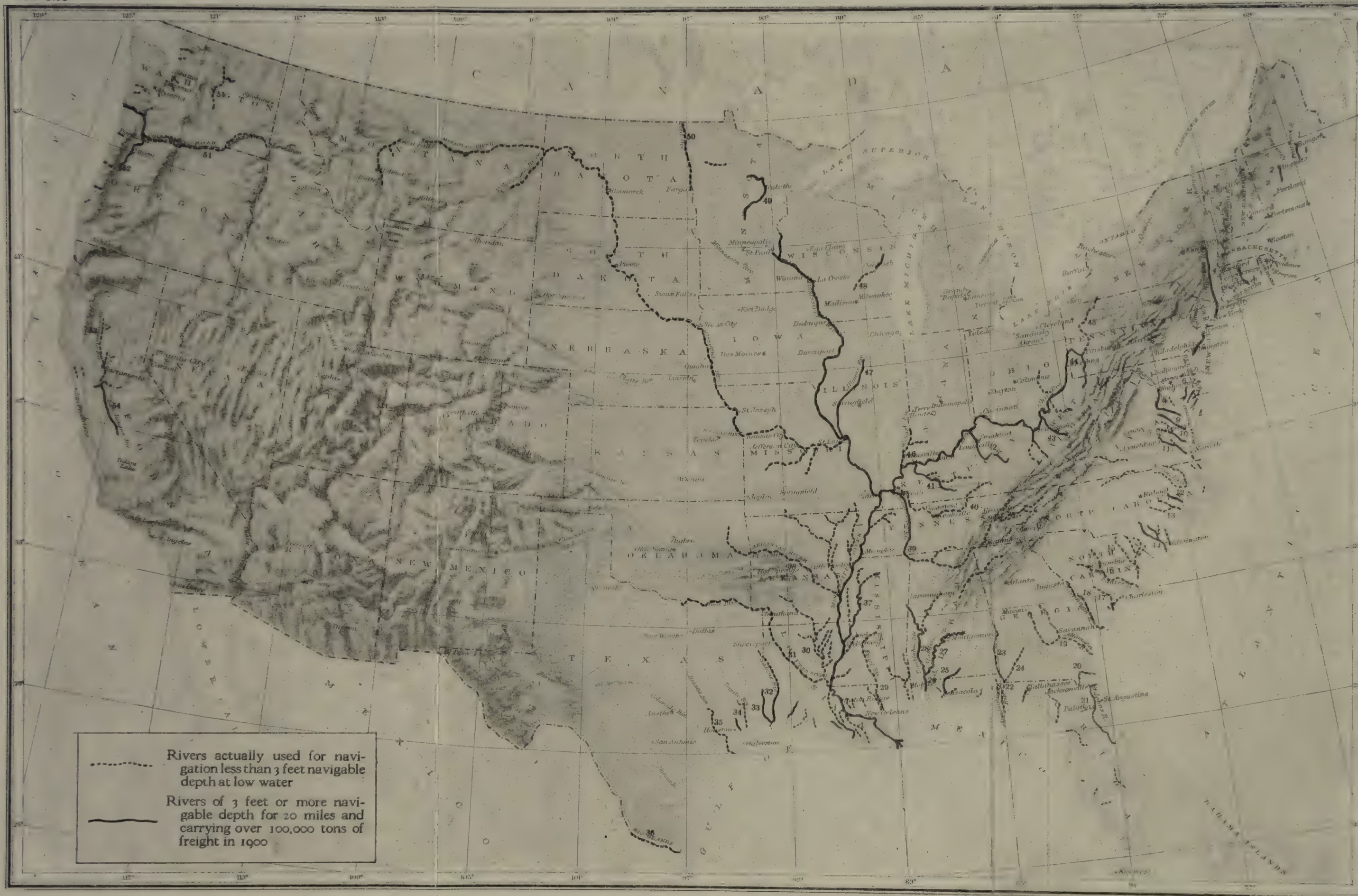
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1. Penobscot
2. Kennebec
3. Connecticut
4. Hudson
5. Delaware
6. Choptank
7. Nanticoke
8. Potomac
9. Rappahannock
10. York
11. James
12. Roanoke
13. Neuse
14. Cape Fear
15. Pedee
16. Santee
17. Edisto
18. Savannah
19. Altamaha
20. St. Marys
21. St. Johns
22. Apalachicola
23. Chattahoochee
24. Flint
25. Escambia
26. Mobile
27. Alabama
28. Tombigbee
29. Pearl
30. Ouachita
31. Red
32. Sabine
33. Neches
34. Trinity
35. Brazos
36. Rio Grande
37. Yazoo
38. Arkansas
39. Tennessee
40. Cumberland
41. Green
42. Kentucky
43. Kanawha
44. Monongahela
45. Allegheny
46. Wabash
47. Illinois
48. Fox
49. Upper Mississippi
50. Red River of the North
51. Columbia
52. Willamette
53. Sacramento
54. San Joaquin

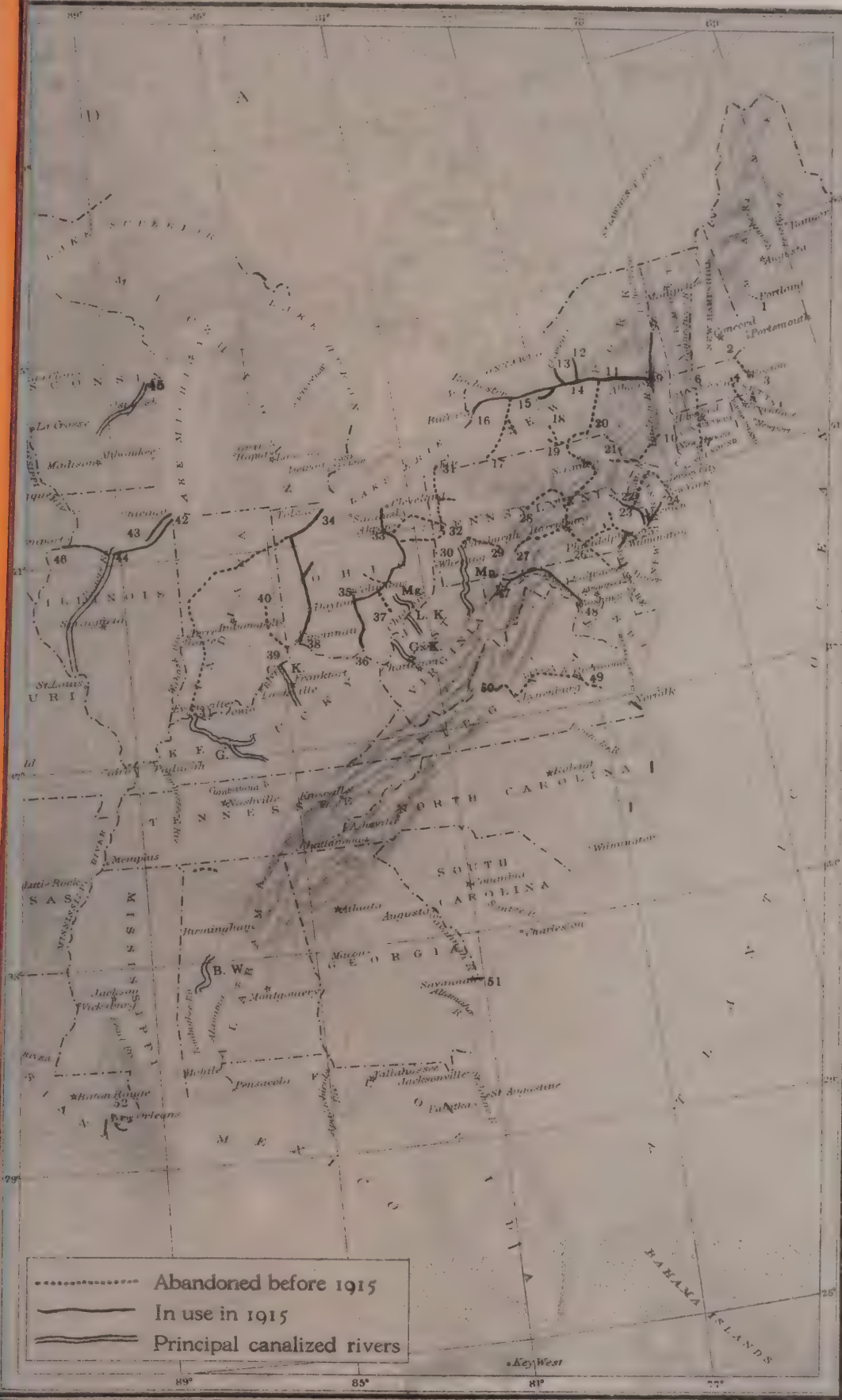
NAVIGABLE RIVERS IN THE UNITED STATES

*Key to Termini of
Canals and Names
of Canalized Rivers.*

1. Portland
2. Lowell
3. Boston
4. Worcester
5. Providence
6. Northampton
7. New Haven
8. Whitehall
9. Albany
10. Kingston
11. Utica
12. Lyons Falls
13. Oswego
14. Rome
15. Rochester
16. Buffalo
17. Olean
18. Watkins
19. Elmira
20. Binghamton
21. Honesdale
22. Mauch Chunk
23. Easton
24. Jersey City
25. Philadelphia
26. Columbia
27. Hollidaysburg
28. Bellefonte
29. Johnstown
30. Pittsburg
31. Erie
32. Beaver
33. Akron
34. Toledo
35. Columbus
36. Portsmouth
37. Athens
38. Cincinnati
39. Lawrenceburg
40. Cambridge City
41. Evansville
42. Chicago
43. Lockport
44. LaSalle
45. Green Bay
46. Rock Island
47. Cumberland
48. Washington
49. Richmond
50. Buchanan
51. Savannah
52. New Orleans

Canalized Rivers.

- B. W., Black Warrior
G., Green
G. K., Great Kanawha
K., Kentucky
L. K., Little Kanawha
Mg., Muskingum
Mn., Monongahela





CANALS IN THE UNITED STATES

Scales
100 0 100 200 300 400 500 600 Miles

100 0 100 200 300 400 500 600 Kilometers



 Rivers actually used for navigation less than 3 feet navigable depth at low water
 Rivers of 3 feet or more navigable depth for 20 miles and carrying over 100,000 tons of freight in 1900

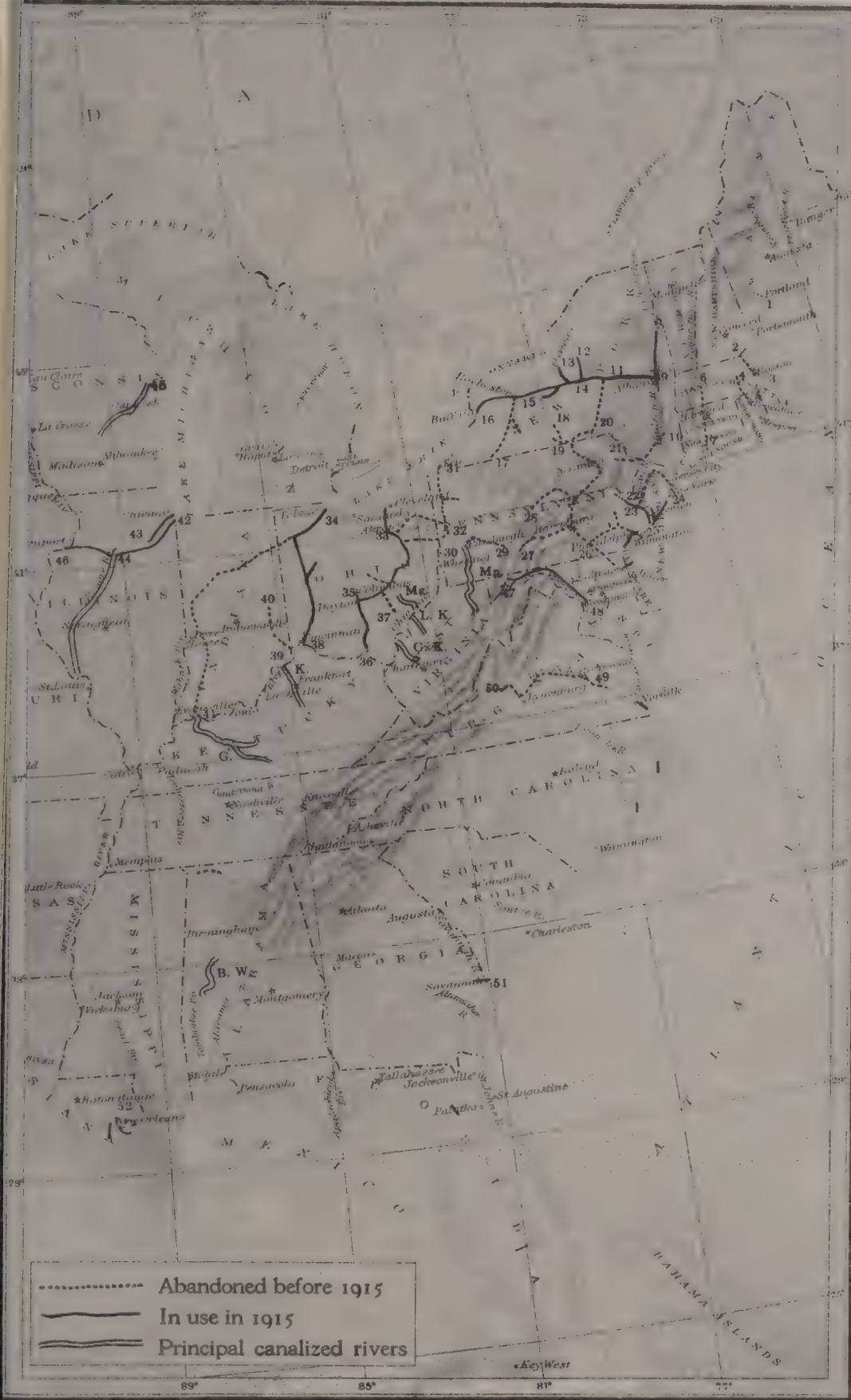
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 nticoke
 tomac
 ppahannock
 rk
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*Key to Termini of
Canals and Names
of Canalized Rivers.*

1. Portland
2. Lowell
3. Boston
4. Worcester
5. Providence
6. Northampton
7. New Haven
8. Whitehall
9. Albany
10. Kingston
11. Utica
12. Lyons Falls
13. Oswego
14. Rome
15. Rochester
16. Buffalo
17. Olean
18. Watkins
19. Elmira
20. Binghamton
21. Honesdale
22. Mauch Chunk
23. Easton
24. Jersey City
25. Philadelphia
26. Columbia
27. Hollidaysburg
28. Bellefonte
29. Johnstown
30. Pittsburg
31. Erie
32. Beaver
33. Akron
34. Toledo
35. Columbus
36. Portsmouth
37. Athens
38. Cincinnati
39. Lawrenceburg
40. Cambridge City
41. Evansville
42. Chicago
43. Lockport
44. LaSalle
45. Green Bay
46. Rock Island
47. Cumberland
48. Washington
49. Richmond
50. Buchanan
51. Savannah
52. New Orleans

Canalized Rivers.

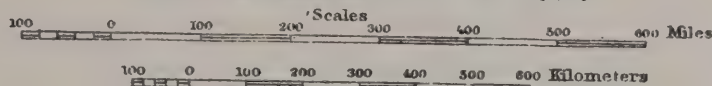
- B. W., Black Warrior
G., Green
G. K., Great Kanawha
K., Kentucky
L. K., Little Kanawha
Mg., Muskingum
Mn., Monongahela

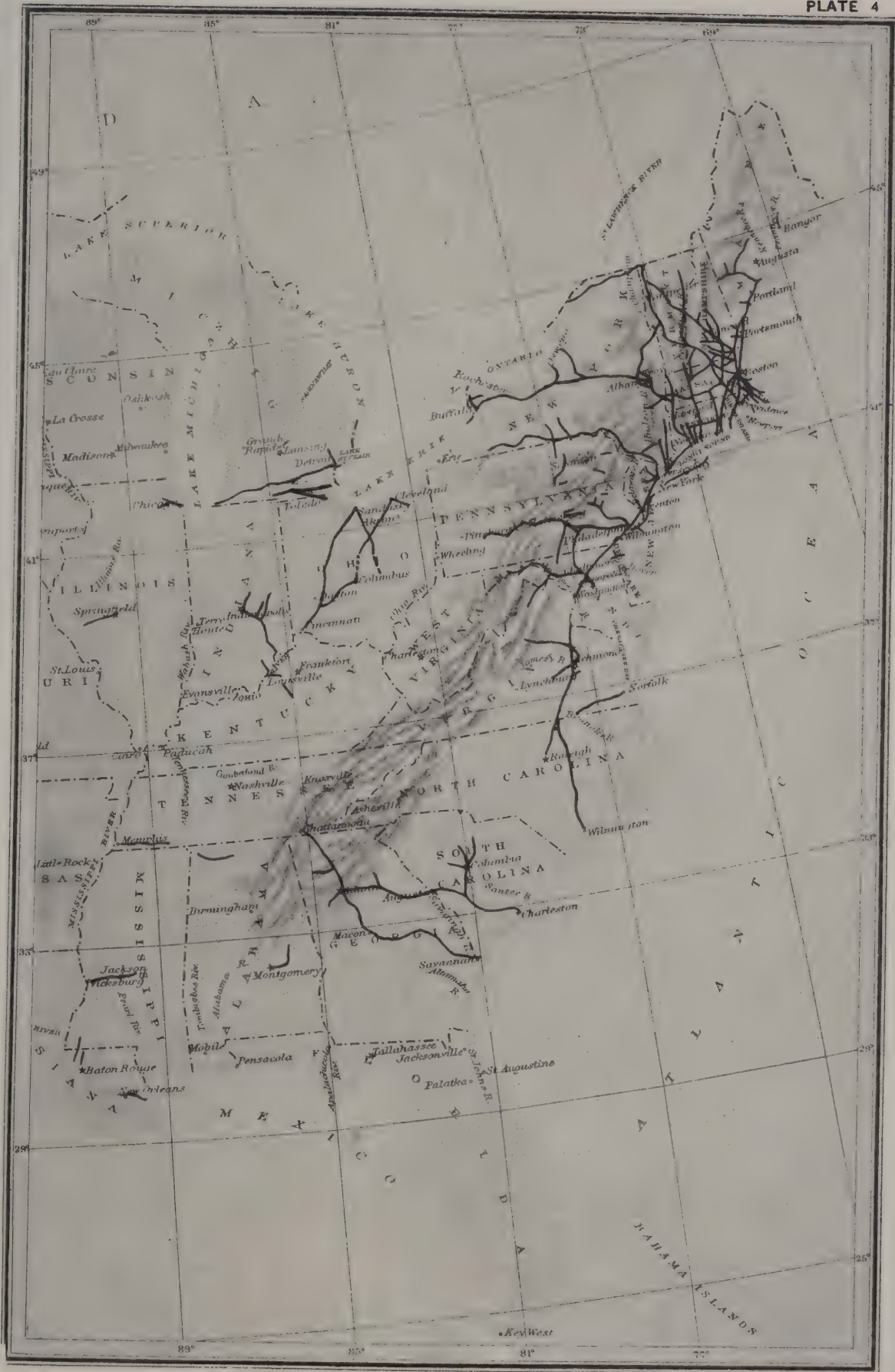


Termini of Railroads, 1840.

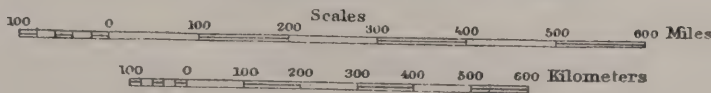
1. Orono
2. Exeter
3. Nashua
4. New Bedford
5. Stonington
6. Norwich
7. Springfield
8. Hartford
9. Bridgeport
10. New Milford
11. State Line
12. Troy
13. Hudson
14. Saratoga Springs
15. Schenectady
16. Ithaca
17. Owego
18. Rochester
19. Batavia
20. Niagara Falls and Lewiston
21. Lockport
22. Corning
23. Blossburg
24. Carbondale
25. Honesdale
26. Morristown
27. Hicksville
28. Plainfield
29. South Amboy
30. Reading
31. Ralston
32. Williamsport
33. Hagerstown
34. Winchester
35. Fredericksburg
36. Weldon
37. Orangeburg
38. Madison
39. Tennille
40. Macon
41. Barnesville
42. Franklin
43. Tusculumbia
44. Decatur
45. Port Hudson
46. Clinton
47. Frankfort
48. Lexington
49. Madison
50. Vernon
51. Meredosia
52. Jacksonville
53. Carey
54. Sandusky
55. Monroe
56. Adrian
57. Ann Arbor
58. Birmingham
59. Johnstown
60. Hollidaysburg
61. Gordonsville

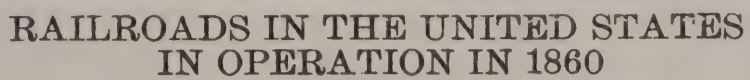
**RAILROADS IN THE UNITED STATES
IN OPERATION IN 1840**





RAILROADS IN THE UNITED STATES IN OPERATION IN 1850

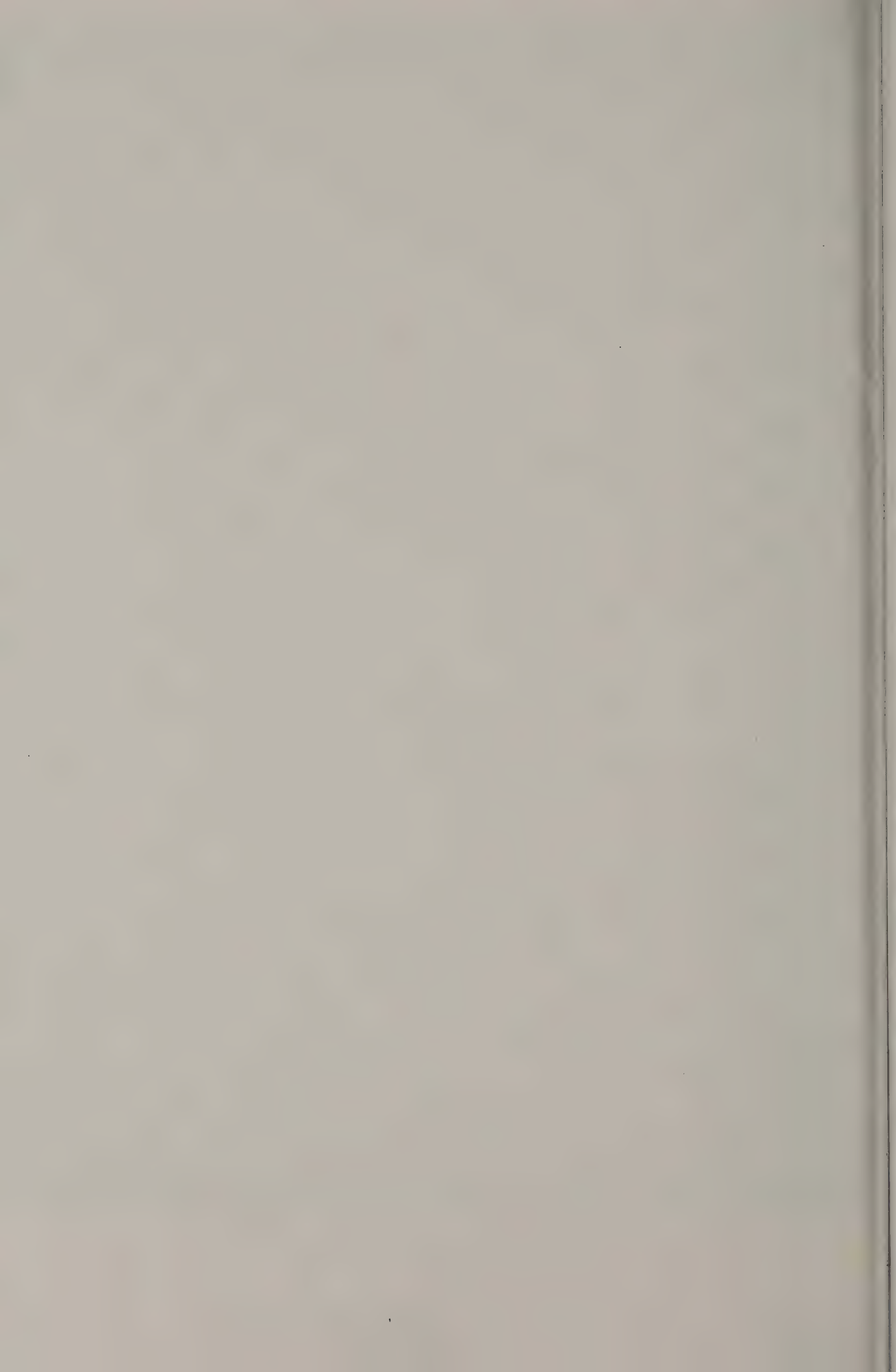




RAILROADS IN THE UNITED STATES IN OPERATION IN 1860

100 0 100 200 300 400 500 600 Kilometers

100 0 100 200 300 400 500 600 Kilometers



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